DOUGLAS, KENNETH A., Ph.D. A Descriptive Analysis of the Psychological Needs of Adults Participating in Music Ensembles: A Survey of New Horizon International Music Association Ensemble Participants. (2011)
Directed by Dr. Patricia E. Sink. 215 pp.

The purpose of this study was to investigate the extent to which the psychological needs of autonomy, competence, and relatedness were satisfied through participation in New Horizons International Music Association ensembles, and to identify the various variables that influence the satisfaction of these needs.

Data were collected from individuals participating in New Horizons International Music Association Ensembles through an online survey ($N$ = 237). Collected data were used to address past in- and out-of-school music activities and behaviors, current music activities and behaviors, participant subjective-well being, and perceived benefits of and barriers to participation. Satisfaction of psychological needs was measured using an adaption of the *Basic Psychological Needs Scale* (Deci and Ryan, 2009). Research objectives were answered using descriptive statistics, and correlation and regression analyses.

The statistical analysis revealed that the demographic make-up of New Horizons International Musicians Association (NHIMA) participants was similar to other community-based music ensembles. Subjects most frequently participated in general music in elementary and band during high school. Band was the most frequently cited out-of-school and current music activity. Scheduling conflicts and music difficulty emerged as potential barriers to participation in community music activities and ensembles. Subjects' perceptions regarding the benefits of participation were generally

positive. Subjects' psychological needs were all being satisfied to a certain extent by participating in NHIMA ensembles. Participation in band, honor groups, solo and ensemble festival, Garage Bands, ensemble directing, improvisation, 'family music time,' class piano, and music technology significantly contributed to satisfaction of psychological needs in the current study ($p \geq .05$). It was concluded that past music experiences as well as formal, informal, and non-formal music participation, and perceptions regarding one's own abilities contributed to the satisfaction of the psychological needs.

# A DESCRIPTIVE ANALYSIS OF THE PSYCHOLOGICAL NEEDS OF ADULTS PARTICIPATING IN MUSIC ENSEMBLES: A SURVEY OF THE NEW HORIZON INTERNATIONAL MUSIC ASSOCIATION ENSEMBLE PARTICIPANTS

by

Kenneth A. Douglas

A Dissertation Submitted to
the Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Greensboro
2011

Approved by

_____
Committee Chair

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

Committee Chair _____
Patricia E. Sink

Committee Members _____
Donald A. Hodges

_____
David J. Teachout

_____
D. Brett Nolker

_____
Date of Acceptance by Committee

_____
Date of Final Oral Examination

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

# CHAPTER I

# INTRODUCTION

A commonly stated purpose of music education is to develop students who are capable of creating music independently once formal music education has ended. Educators at the Tanglewood and the Housewright Symposia echoed this sentiment. According to Choate (1968), those in attendance at the Tanglewood Symposium declared that "schooling serves only as a beginning for a lifelong education" (p. 111). Jellison (2000), at the Housewright symposium, states that there is

> an implicit assumption that school music programs provide students with the knowledge and skills that will enable them to participate successfully in a variety of meaningful music experiences in adult life (p. 112).

Alternatively, music educators are concerned that too few music students are active musically after high school, in college, or in other facets of adult life. Furthermore, music educators are concerned about declining retention rates in high school performing ensembles, and similar concerns are expressed about adult music participation during college years and beyond (Gates, 1988). The current research study was designed to examine variables that initiate and sustain participation in music among adults.

## General Background of the Problem

The use of knowledge and skills outside and beyond kindergarten through twelfth-grade classrooms reflects a desire for lifelong learning, and many music educators have a keen interest in lifelong music learning (Bergonzi & Smith, 1996; Chiodo, 1997; Coffman, 2002; Gates, 1991; Jellison, 2000; Jorgensen, 1993; Madsen, 2000; Mark, 1996; Murphy & Sullivan, 1968). Music has long been viewed as a lifelong pursuit. In 1968, those attending the Tanglewood Symposium declared that “schools and colleges should provide adequate time for music in programs ranging from pre-school through adult or continuing education" (Murphy & Sullivan, 1968, p. 56). In 1969, the Goals and Objectives Project was established to implement the recommendations of the Tanglewood Symposium; one of the stated objective was to “advocate the expansion of music education for adults both in and out of school” (Lehman, 1986, p. 14). In 2000, those at the Housewright Symposium declared that “all persons, regardless of age, cultural heritage, ability, venue, or financial circumstances deserve to participate fully in the best music experience possible” (Madsen, 2000, p. 219).

Accordingly, there has been research on various factors that motivate the initiation and continuation of adult music participation. Much of the research regarding adult music participation has involved community and amateur bands (Black, 1997; Bowen, 1995; Compton, 1979; Fuller, 1973; Heintzelman, 1988; Patterson, 1985; Spencer, 1996; Tiede, 1970; Wilhjelm, 1998). There is also research on adult participation in community and amateur choirs (Aliapoulios, 1969; Bell, 2000; Buness, 1979; Coffin, 2005; Darrough, 1990; Faivre-Ransom, 2001; Farrell, 1972; Green, 1998; Hinkle, 1987; Holmquist, 1995;

Mack, 1982; Seago, 1993; Simmons, 1962; Spell, 1989; Tipps, 1992; Vincent, 1997). Additionally, research has been conducted on the general nature of post-secondary school music participation (Clothier, 1967; Durham, 1987; Faivre-Ransom, 2001; Hardin, 1997; Milton, 1982; Royse, 1989). Some researchers have focused on the influence of childhood experiences on adult musical activities (Lawrence & Dachinger, 1967; Peterman, 1954). Other researchers have investigated adult participation in music lessons (Chen, 1996; Cooper, 1996; Curran, 1982; Johnson, 1982; Pike, 2001). There also has been expressed interest in music education for various adult populations, focused on describing such community music education programs for adults (Gerkowski, 1965; Graessle, 1998; Halfvarson & O'Connor, 1970; McCullough, 1981; Moser, 2003; Patchen, 1986; Robertson, 1992; Secrest, 1982; Tatum, 1985), and on results of designing and implementing adult music education programs (Edington, 1992; Kellmann, 1984; Myers, 1986; Secrest, 1982; Stern, 1968). Many of these studies were designed to develop profiles of the participants, identify factors influencing adult music participation, and in some cases, predict music participation. Most of the aforementioned studies have implications for music education programs at all levels.

A particular weakness of the existing research is the seemingly unfocused attention on a plethora of possible variables contributing to adult music participation, including descriptions of the participants' backgrounds, training, motivations, and personality. There has been some criticism that focusing on an excessive number of individual variables does not provide a coherent model of adult music participation (Gates, 1988, 1991). To encourage and possibly contribute to a coherent model of adult motivations to

participate in music, the current research is designed to use a limited selection of variables related to adult music participation. Results of such research may provide insights into structuring and implementing school music programs that are meaningful and applicable to individuals as they graduate and enter adulthood, and thereby, may motivate adults to pursue lifelong music learning and participation.

## Music Participation and Motivational Theories

Historically, motivation theories have been described as either mechanistic or organismic. Mechanistic or behavioral theories are based on the assumption that individual motivations are based on products of environmental stimuli and physiological drives (e.g., hunger, thirst, and pain avoidance). These theories focus on the environment and ways that humans react to and behave within surrounding environments. Motivation theories, based on a mechanistic premise, include conditioning, drive, need, and reinforcement theories (Maehr, Pintrich, & Linnenbrink, 2002).

Conversely, organismic or social-cognitive theorists hypothesize that humans possess free will, and thus, are able to engage and interact purposely with surrounding environments in a manner that satisfies basic, intrinsic psychological needs, as well as physiological drives. Such theories attempt to account for the internal, mental processes in addition to the environmental stimuli and physiological drives that may be operating. Central to an organismic theory is the notion that all humans have an innate tendency directed toward positive growth, mental health, and psychological and physiological well-being. Examples of organismic theories include expectancy by value theory, self-

efficacy theory, attribution theory, achievement-goal theory, and intrinsic motivational theories (Maehr, et al., 2002).

The theoretical basis of the current study is based upon self-determination theory. Self-determination theory (SDT) addresses the intrinsic and extrinsic motivators that facilitate and sustain participation (Ryan & Deci, 2000). Motivation has been recognized as an important factor in initiating and sustaining music participation, as well as participation in athletics, leisure activities, church, and continuing education. A sub-theory of SDT is the Psychological Needs Theory. According to Deci and Ryan, there are three basic psychological needs that all persons need satisfied to sustain participation in an activity. These psychological needs are *Autonomy, Competence,* and *Relatedness*. These needs promote the internalization and integration of behaviors. Deci and Ryan assert that the psychological needs of autonomy, competence, and relatedness are universally essential to human functioning and personal growth (Deci & Ryan, 1985; Deci & Ryan, 2002; Ryan & Deci, 2002). Certain internal, external, and social contextual factors nurture the satisfaction of these needs, thus promoting intrinsic motivation to participate. The current study is designed to determine the extent to which the psychological needs of autonomy, competence, and relatedness are satisfied within music participants in a New Horizons International Music Association ensemble.

The need for autonomy refers to the desire and ability to feel and act purposely in accordance with one's interests and values (deCharms, 1968). A person's degree of autonomy is determined by a perceived *locus of causality*. Autonomous persons perceive themselves as having an *internal* locus of causality that facilitates their behaviors (i.e.,

based on a person's own characteristics, such as ability or effort). Alternatively, persons with low autonomy or an *external* locus of causality believe that someone or something else is controlling their behaviors (i.e., based on factors beyond the person's control such as luck).

White (1959) has described the need for competence as the desire to engage in and master personally challenging tasks efficiently and effectively. The psychological need for relatedness refers to a person's desire to be meaningfully connected with others within environments (Deci & Ryan, 1985).

Deci and Ryan (2000) acknowledge that there may be other needs that influence intrinsic motivation, but believe that autonomy, competence and relatedness are innate, fundamental, and basic. Limiting the current research to these three psychological needs, therefore, is prudent, economical, and parsimonious. Furthermore, researchers in many different disciplines have verified empirically the existence of autonomy, competence, and relatedness (Deci & Ryan, 2002; Ryan & Deci, 2000). Self-determination theory and psychological needs theory offer a strong theoretical basis from which to understand and conceptualize persons' motivations to participate in musical activities as adults.

## New Horizons International Music Association

The New Horizons International Music Association (NHIMA) is a young and growing association of music ensembles. The purpose of NHIMA is to provide "entry and re-entry points for older adults [in music]" (Ernst, 2001, p. 47). The age of most NHIMA adults or members starts at 50 years of age. New Horizons International Association Music ensembles provide instruction and performance opportunities to adults all over the United States and Canada. In 1991, The first New Horizons Band was established in Rochester, New York by Roy Ernst as the conductor (Ernst & Emmons, 1992). Currently, more than 120 bands, choirs, and orchestras belong to NHIMA. Each ensemble functions independently, is led by current or former high school or college music educators, and rehearses once or twice a week. New Horizons International Association Music ensembles are similar to community music ensembles in that they prepare music for performance, but unlike most community ensembles, NHIMA ensembles also provides instruction to beginning adults (Coffman, 2009). There have been a growing number of studies investigating NHIMA ensembles (e.g. Black, 1997; Coffman, 1996, 2007, 2008; Coffman & Adamek, 1999; Dabback, 2006; Kruse, 2007). The current study contributes to the growing body of research into NHIMA ensembles and participants, and thus, to understanding characteristics of lifelong music learning and learners.

## Purpose of the Study

The purpose of the study was to investigate the extent to which the psychological needs of adults, who participate in New Horizons International Music Association (NHIMA) ensembles, are being satisfied, and to examine the contributions of variables contributing to adults' participation in NHIMA ensembles. Additionally, the current study was designed to determine relationships among satisfaction of psychological needs and variables associated with music participation. The current study was designed to accomplish the following research objectives.

1. Identify and describe the following background variables of adults who participate in New Horizons International Music Association ensembles.
    a. Past musical activities and behaviors
    b. Current music activities and behaviors
    c. Perceived benefits of participation
    d. Subjects' subjective well-being
    e. Perceived barriers to participation
    f. Demographic information.
        i. Age
        ii. Sex
        iii. Marital Status
        iv. Profession/Vocation
        v. Retirement Status
        vi. Income

vii. Education

viii. Ethnicity

2. Determine the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* are being satisfied within New Horizons International Music Association ensemble participants.

3. Determine the relationship among psychological needs and selected background variables within those who participate in New Horizons International Music Association ensembles.

## Value of the Study

Given that many music education professionals believe that continued participation in music should be one of the outcomes of music instruction and that there is a general decline of adult music participants, (Bergonzi & Smith, 1996; Chiodo, 1997; Coffman, 2002; Gates, 1991; Jellison, 2000; Jorgensen, 1993; Madsen, 2000; Mark, 1996), additional research is needed to understand some of the factors that motivate adults to participate in musical activities. The current study is designed to provide insight into some of the factors influencing adults who participate in NHIMA ensembles. These ensembles are ideal for such a study because participation is often initiated, promoted, and sustained within the ensemble. Furthermore, NHIMA supports the examination of the benefits of music participation for its participants, in particular, and for the music education profession, in general. Research on continued music participation among adults

may provide insight into effective structuring and implementation of school music programs that are meaningful and useful to individuals as they graduate and enter adulthood.

The primary focus of the current study is to examine the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* are being satisfied among adults participating in NHIMA ensembles. The study may contribute to the growing body of research on the value of NHIMA ensembles that are designed to provide adults with lifelong music learning opportunities. The burgeoning information about adults who participate in NHIMA ensembles suggests that additional research is necessary. The current study may contribute to the professional literature by identifying the contributions of specific characteristics of persons who participate in NHIMA and thus continue to pursue music learning opportunities. Such information will be useful to educators, administrators, and policy-makers when making decisions and designing experiences within programs designed to facilitate lifelong music learning among adult learners.

To elicit the necessary information and acquire a sufficient sample size, internet-based survey methodology was used; that is, an online questionnaire was developed and administered to collect the necessary data for the current study. A number of studies were consulted that support the premise that online data-collection instruments are not only efficient, but also appropriate and effective (Dixon & Turner, 2007; Roberts, 2007; Sue & Ritter, 2007; Ye, 2007).

## Operational Definitions of Terminology

This section includes the operational definitions of the terminology of the current study. Specifically, the operational definitions provided include: (a) related terminology, (b) three psychological needs, based on self-determination theory (Deci & Ryan (2000); (c) and background variables.

### Related Terminology

*Music Learning* occurs in various environments and result from formal, non-formal and informal experiences. Generally, music learning is the acquisition of music skills, knowledge, values, and attitudes by an individual that results in a long-term change of behaviors. Specifically, music learning may occur as a result of formal, non-formal and informal experiences in performance-based and non-performance-based encounters with music. Additionally, past music learning is examined in the present study and occurs as a result of previous participation in performance-based and non-performance-based formal, non-formal and informal settings.

*Formal Music Learning* is purposeful, and occurs with guidance or instruction provided by a music specialist. This type of learning also occurs within an explicit space and structured format, such as an educational institution, and typically results in a diploma or other such certificate of achievement (Coffman, 2002).

*Non-Formal Music Learning* occurs outside of an educational institution, yet typically parallels learning occurring within an educational institution. Non-formal music learning does not result in a diploma or other such certificates of achievement. Non-

formal and formal music learning are similar; both types of learning typically consist of purposeful and systematic instruction directed by a music specialist. Non-formal music learning, however, typically permits more flexible use of space, material, and structure and is more responsive to participants' needs and desires than formal music learning (Coffman, 2002).

*Informal Music Learning* is incidental and often self-initiated. This type of music learning occurs outside of an educational institution, and typically is results from daily music experiences in any environment as well as interactions with other persons who occupy the environment (Coffman, 2002).

**Psychological Needs**

*Autonomy* is the psychological need for an individual to be able to direct, organize, regulate, or otherwise freely control his or her own behavior relative to his or her personal values and interests within the environment. Researchers have demonstrated that a person's sense of autonomy can be influenced by reward contingencies, styles of leadership and communication, and social structures (Deci & Ryan, 1987; Ryan & Powelson, 1991).

*Competence* is the psychological need for an individual to be able to engage effectively and interact within the environment. Competence is measured by the degree to which persons participate in activities that are beyond their current ability level (Ryan & Powelson, 1991; White, 1959).

*Relatedness* is the psychological need for an individual to feel a sense of belongingness and connectedness with others within the environment. Relatedness is measured by the extent to which a person participates in activities that require the participation of others (Ryan & Powelson, 1991).

**Selected Background Variables**

The contributions of four background variables to adult music participation are being examined in the present study, including: (a) current music activities and behaviors, (b) past music activities and behaviors, (c) perceived barriers to participation, and (d) demographic information. The selection of these specific background variables was based upon a review of literature on continued adult participation in music and because current empirical evidence suggests that the selected variables may influence continued participation in music (Coffman, 2002; Myers, 1995).

*Current Music Activities and Behaviors* refer to formal, non-formal, or informal participation in performance- or non-performance-based music for one year or more. Examples of current music activities and behaviors may include participation in community music ensembles, church music ensembles, Garage Bands, private music instruction, and continuing education courses.

*Past Music Activities and Behaviors* refer to formal, non-formal or informal participation in performance- or non-performance- based music for one year or more that occurred at least one year prior to the survey. Examples may include school music

ensembles, school music courses, community music ensembles, church music ensembles, Garage Bands, or private music instruction.

*Barriers to Music Participation* refers to the circumstances that may prevent adults from continuing to participate in music. The decision to participate in music as an adult may be based, in part, on an analysis of the costs and benefits of participation. Participation is sustained by the extent to which a participant perceives that benefits exceed the costs. Analysis of barriers to participation may yield useful information necessary for understanding adults continued participation in music. Results of the analyses may be useful to educators, administrators, and policy-makers when making decisions regarding the nature of music education and facilitating lifelong music learning.

*Demographic* variables include: (a) age, (b) sex, (c) marital status, (d) profession/vocation, (e) retirement status, (f) income, (g) education, and (h) ethnicity. Analysis of demographic variables is focused on characterizing adults participating in music, and may be useful when making cross-sectional and multi-generational comparisons among the various adult populations with different demographics. Furthermore, the demographic data are examined in relation to past and current musical activities and behaviors, perceived barriers to participation, and psychological needs.

## Limitations of the Study

The present study is limited to a questionnaire-based survey of adults who participate in New Horizons International Music Association ensembles. Such participation occurs within a specific type of non-formal, performance-based setting, and may or may not

generalize to other types of music participation. Those who voluntarily choose to participate in performance-based music activities do so for a myriad of reasons. While results of the present study may provide useful results in future research on other types of non-formal, performance-based music experiences, the psychological needs and reasons for continued music participation may manifest differently in other formal, non-formal and informal performance-based music activities.

# CHAPTER II

# REVIEW OF LITERATURE

## Introduction

The purpose of the study was to investigate the extent to which the psychological needs of adults, who participate in New Horizons International Music Association (NHIMA) ensembles, are being satisfied, and to examine the contributions of variables contributing to adults' participation in NHIMA ensembles. Additionally, the current study was designed to determine relationships among satisfaction of psychological needs and variables associated with music participation. The purpose of this chapter is to review related topics and research, as well as to present findings that are relevant to the foundations of the current study. The review begins with a general overview of the research. The research, then, is discussed in four sections, including: (a) theoretical developments related to music participation, (b) current research in music participation, (c) self-determination theory, and (d) research on New Horizons International Music Association ensembles.

Coffman (2002) conducted a review of the literature regarding adult participation in music in *The New Handbook of Research on Music Teaching and Learning.* His review considered literature from a variety of populations and settings; including community ensembles, senior citizen and brass bands, church choirs, adult piano classes, and community music programs. Based on his review, Coffman concluded that persons

generally are motivated to participate in music by: (a) personal, (b) musical, or (c) social factors. Coffman also concluded that persons who participate in music activities as adults generally participated in music activities as children, and were generally surrounded by music and musicians as children, both in school and at home. Because of the similarity among populations and music activities studied, Coffman cautioned that these generalizations might not be appropriate. There is, however, one generalization that, according to Coffman, may be appropriate across all populations, activities, and settings: "the importance of prior experience to future participation" (p. 202).

## Theoretical Developments Related to Music Participation

The nature of adult participation in music may be subsumed under the general umbrella of lifelong learning (Titmus, 1996; Van Der Kamp, 1996). However, a sufficient theoretical model of lifelong learning in music has yet to be developed (Nazareth, 1999). In fact, there is still little consensus regarding models of lifelong learning in general. One barrier preventing the development of a sufficient model of lifelong learning is the lack of suitable data. Most research on lifelong learning in general is based on cross-sectional data. The development of a model of lifelong learning is dependant upon the availability of large-scale survey data. Unfortunately, such large-scale survey data are extremely difficult to collect (Van Der Kamp, 1996).

There have been attempts to research music participation within a broader framework of lifelong learning (Arasi, 2006; Belz, 1994; Busch, 2005; Chiodo, 1997; Darrough, 1990; Horton, 1992; Kruse, 2007; Larson, 1983; Myers, 1995; Pike, 2001; Rybak, 1995;

Tatum, 1985). Researchers investigated aspects related to lifelong learning such as self-expressed interests and needs as well as the self-perceptions of achievement. This research demonstrates the importance of background experiences and achievement. Lifelong commitment generally begins during childhood. Moreover, one's self-perception of achievement, skill-level, and knowledge base appears to be a powerful component of sustained commitment. Private- and self- instruction, sight-reading, and aural skills were cited as essential to being able to participate in music making during adulthood. Moreover, if a person does not perceive him- or herself as being able to participate, he or she will generally stop participating. It is important to note, that many self-perceptions of achievement are not consistent with actual achievement.

Some researchers have placed participation in the framework of leisure (e.g. Belz, 1994; Buchanan, 1998; Busch, 2005; Coffin, 2005; Pike, 2001; Rybak, 1995; Spencer, 1996). Stebbins's (1982) theory of serious leisure and Gates's (1991) theory of participation have provided the theoretical framework for much of this research. Belz (1995), Busch (2005), Chiodo (1998), and Holmquist (1995) specifically relied on Gates's theory. These studies all provide further evidence that adult music making is an extension of earlier music making.

Theoretical developments in music participation have been based almost entirely on literature reviews. Gates (1991) proposed a theory of participation; Jorgenson (1993) proposed a social theory in relation to music participation; and Coffman (2002) examined lifelong music participation. Myers (1995) recommended that a context be developed in which lifelong learning in music is considered along a continuum. Similarly, Nazareth

(1999) suggested that lifelong learning in music be considered at different points of life (i.e. ages immediately prior and following formal education).

Stebbins (1982, 1992) discussed adult music participation in his theory of *Serious Leisure.* To Stebbins, leisure time is a person's discretionary or free time; it is time that is not devoted to satisfying other needs or responsibilities. Serious leisure is the use of leisure time in pursuit of developing special skills and knowledge. Such use of leisure time occurs despite adversity; results in membership to a particular subculture; may evolve into a career; requires significant investment of effort, time, and money; offers many of the benefits unique to the activity; and is a source of identity. The benefits are social and personal. Social benefits often include social attraction and group accomplishment. Personal benefits often include enjoyment, satisfaction, self-actualization, and self-expression. In addition to effort, time, and money, other costs of participation include disappointment, dislikes, and tensions. When the costs out weigh the benefits, participation is discontinued.

Stebbins (1982, 1992) categorized adult music participation as either amateur or professional. There are several characteristics of professionals. Professionals (a) are recognized as authorities in their field, (b) have certification from a institution, (c) have attained a mastery of knowledge and techniques specific to their discipline, (d) produce novel and non-standardized products, (e) have an established identity within a field, (f) emphasize high standards rather than material gain, (g) and are masters of a cultural tradition. Professionals offer a desirable service to the public. In return, the public provides financial support and feedback as to the desirability of what the professionals

are providing. Amateurs exist within in the same system and adopt many of the same characteristics as professionals, but are rarely able to maintain similar standards of excellence as professionals.

According to Stebbins (1982, 1992), amateurs are often educated or trained by professionals, and in some cases, participate with professionals. Amateurs have the leisure time to devote to the study of broader aspects of the art than professionals do. Furthermore, the focus that amateurs place on the broader aspects of the artistic product often serves as a reminder to professionals to not place an inappropriately high emphasis on technique. The amateur often provides the professional with the motivation to maintain high standards of excellence. In fact, many professionals begin their careers as amateurs. To this end, amateurs and professionals experience many of the same benefits and rewards.

Gates (1991) proposed a theory of music participation also rooted in leisure theory. He suggested that there are three categories of people with respect to music participation: music participants, music audiences, and those for whom music plays no significant role. Gates divided music participants into six hierarchical sub-categories, including professionals, apprentices, amateurs, hobbyists, recreationists, and dabblers. To music professionals and music apprentices, music participation was work; a means for earning a living. Music amateurs viewed music participation as a leisure activity. Music hobbyists also viewed music as a leisure activity. In Gates theory, the hobbyists were not as influenced by social systems as those in the previous three subcategories were. Moreover, both amateurs and hobbyists placed a high degree of importance on the development of

music skills and knowledge, and are willing to accrue economic costs over time. Music recreationists and dabblers viewed music as play. Recreationists participated as a form of self-entertainment; dabblers participated because of a sense of curiosity. For both the recreationists and dabbler, the costs out-weighed the benefits of music participation, as long as music participation remained a curiosity. Gates concluded that community ensembles were largely comprised of amateurs, apprentices, and professionals.

From a historical perspective, Compton (1979) made similar conclusions as Gates. Compton analyzed the history and nature of amateur music making during the late 18th century America. He concluded that there were four categories of amateur musicians: (a) self-trained musicians: (b) young persons for whom music was an important social accomplishment; (c) club or ensemble members; and (d) serious amateurs. For the self-trained musicians, music was a diversion, they generally preferred popular, less serious music, and rarely performed for an audience or at other social functions. A music education was an expected part of the upbringing for many young persons of upper-class families. Their music education generally consisted of keyboard training, and these skills were used to entertain friends and family. Instrumental musicians were able to join instrumental clubs where they were able to play as well as receive instruction. Many were attracted to these clubs for both social and musical reasons. Serious amateurs were generally well-trained and found deeper satisfaction and enjoyment from making music. Compton states that what separates serious amateurs from professionals is their belief that music is “a means of spiritual uplift rather than a skill to be exploited for profit… and by

their determination that music should hold an honored, but secondary, place in their lives" (p. 244).

Jorgenson (1993) developed a social theory of music participation as an alternative to Gates's theory of participation. She suggested that Gates confused the empirical with normative (i.e., *what is* with *what should be*) qualities of music participation. Jorgenson believed that hierarchical categories, such as the ones Gates and Compton identify, place an inappropriate premium on the higher levels of participation. Jorgenson also suggested that in addition to the investigation of music participation in instrumental and choral ensembles, and types of participation such as listening, composing, concert attendance, and dancing should also be investigated. Jorgenson believed that a theory of participation should not place music makers in opposition to music consumers. Moreover, she believed that simply because persons may be unconsciously unaware of the music in their daily lives, they should not be classified as non-participants.

## Current Research into Music Participation

Researchers have investigated the nature of post-secondary participation and the effects of secondary music education on post-secondary participation (e.g. Anguiano, 2006; Buchanan, 1998; Clothier, 1967; Delano & Royse, 1987; Dregalla, 1993; Horton, 1992; Lawrence & Dachinger, 1967; Milton, 1982; Mountford, 1978; Orday, 1964; Royse, 1989). Others have examined the nature of participation in adult and continuing music education (e.g. Bowles, 1991; Chen, 1996; Cooper, 1996, 2001; Dabback, 2006; Kruse, 2007; Pike, 2001; Rohwer, 2005b; Rybak, 1995). Still, others have investigated

the nature of participation in community ensembles (e.g. Bell, 2000; Coffman, 1999; Coffman, 2006; Faivre-Ransom, 2001; Hardin, 1997; Holmquist, 1995; Rohwer, 2008; Rohwer & Coffman, 2006; Thaller, 1999), church ensembles (e.g. Farrell, 1972; Mack, 1982; Rohwer, 2010; Seago, 1993), and various amateur groups (e.g. Balfe & Heine, 1988; Black, 1997; Coffin, 2005; Green, 1998; Hinkle, 1987; Hosler, 1992). Further, researchers investigated retirement age populations (e.g. Darrough, 1990; Edington, 1992; Flowers & Murphey, 2001; Larson, 1983; Moser, 2003; Robertson, 1992; Rybak, 1995). There are a growing number of studies in which that investigated New Horizon International Music ensembles have been investigated (e.g. Black, 1997; Coffman, 1996, 2007, 2008; Coffman & Adamek, 1999; Dabback, 2006; Kruse, 2007; Rohwer, 2005b; Rohwer & Coffman, 2006).

**Previous Musical Activity Among Participants**

Researchers have investigated the backgrounds of adults who have exhibited a lifelong commitment to music. Most importantly, these studies have demonstrated the importance of prior experiences in the home during childhood (e.g. Belz, 1994; Busch, 2005; Chiodo, 1997; Cooper, 1996, 2001; Dabback, 2006); primary and secondary school (e.g. Busch, 2005; Chiodo, 1997; Coffman, 1996; Darrough, 1990; Flowers & Murphey, 2001); and in church and community groups during childhood (e.g. Cooper, 1996, 2001; Darrough, 1990; Spell, 1989; Vincent, 1997). The importance of specific types of music experiences were also investigated such as chamber music (Bowen, 1995; Chiodo, 1997; Clothier, 1967; Mountford, 1978); private lessons (Bowen, 1995; Cooper, 1996, 2001;

Flowers & Murphey, 2001; Larson, 1983; Mountford, 1978; Patterson, 1985); and piano instruction (e.g. Bowles, 1991; Patchen, 1986; Vincent, 1997).

**Current Musical Activity Among Participants**

Much of the research regarding music participation has involved community and amateur bands (Black, 1997; Bowen, 1995; Compton, 1979; Fuller, 1973; Heintzelman, 1988; Patterson, 1985; Spencer, 1996; Tiede, 1970; Wilhjelm, 1998). Researchers have investigated the nature of post-secondary school music participation (Clothier, 1967; Durham, 1987; Faivre-Ransom, 2001; Hardin, 1997; Milton, 1982; Royse, 1989). There is research regarding participation in community and amateur choruses (Aliapoulios, 1969; Bell, 2000; Buness, 1979; Coffin, 2005; Darrough, 1990; Faivre-Ransom, 2001; Farrell, 1972; Green, 1998; Hinkle, 1987; Holmquist, 1995; Mack, 1982; Seago, 1993; Simmons, 1962; Spell, 1989; Tipps, 1992; Vincent, 1997). Some studies have investigated adult participation in music lessons (Chen, 1996; Cooper, 1996; Curran, 1982; Johnson, 1982; Pike, 2001). There is an interest in describing (Gerkowski, 1965; Graessle, 1998; Halfvarson & O'Connor, 1970; McCullough, 1981; Moser, 2003; Patchen, 1986; Robertson, 1992; Secrest, 1982; Tatum, 1985) and designing and implementing music education programs for various adult populations (Edington, 1992; Kellmann, 1984; Myers, 1986; Secrest, 1982; Stern, 1968) music education programs for various adult populations. There is also growing interest in NHIMA ensembles specifically (Black, 1997; Coffman, 2007, 2008; Coffman & Levy, 1997; Dabback, 2006; Kruse, 2007; Rohwer, 2005b; Rohwer & Coffman, 2006).

**Motivations of Participants**

Researchers exploring adult participation have focused on the motivations of those who participate in university ensembles (Clothier, 1967; Delano & Royse, 1987; Milton, 1982; Mountford, 1978; Royse, 1989; Simmons, 1962); community ensembles (e.g. Anguiano, 2006; Dabback, 2006; Faivre-Ransom, 2001; Green, 1998; Heintzelman, 1988; Seago, 1993; Vincent, 1997); and amateur ensembles (Belz, 1994; Busch, 2005; Green, 1998). Researchers have identified particular motivations that may be generalized into three categories: (a) personal, (b) musical, and (c) social. Personal motivations are related to the mental and emotional benefits of experienced by individuals. Personal motivations are typically described as enjoyment, satisfaction, self-expression, pride, or distractions from routine or daily concerns. Musical motivations are related to the interactions between the individual and the music. Musical motivations are typically identified as a love for the music, or the opportunities to make or learn about music. Social motivations relate to the interaction among the various persons involved. Social motivations are typically described as group accomplishment, desires to contribute to a group, meeting new people, being with friends, and feelings of membership, and belonging to a group.

There is little agreement as to which motivations are the primary motivations. It may be possible to identify primary motivations within a particular context or circumstance, but when examining sustained participation and commitment, it appears that all the various types of motivations are important.

## Benefits of Music Participation

Researchers have investigated the benefits of participation. In addition to the positive aspects of participation that underscores a person's motivation, other benefits include physical and mental health, quality of life, and social development (Coffman, 2006, 2008, 2009; Coffman & Adamek, 1999, 2001; Kruse, 2007; Larson, 1983). Researchers also have explored the nature and dimensions of meaning derived from participation in music (Arasi, 2006; Belz, 1994; Chiodo, 1997; Farrell, 1972; Hinkle, 1987; Hylton, 1981; Kruse, 2007; Rybak, 1995; Tsugawa, 2009). In practical matters, meaning may manifest itself in much the same way as motivation. For example, the dimensions of meaning, such as those identified by Hinkle, Hylton, and Mills are based on the outcomes of participation. In this sense, there is little separating meaning and motivation; they both manifest themselves as the reasons for participating. More generally, however, meaning refers to the intellectual and emotional connections that individuals may have to the activity. Music is one of a number of ways persons are able lead meaningful lives. To Chiodo (1997), Dabback (2006), and Kruse (2007) dimensions of meaning are identified by feelings of camaraderie, commitment, membership, belonging, reciprocity, and the self-perception that one's efforts are productive and constructive.

## Barriers to Participation

In addition to factors that influence participation, researchers have investigated factors that may prevent participation (e.g. Bowles, 1991; Chiodo, 1997; Cooper, 1996, 2001; Kruse, 2007; Spencer, 1996). Typical barriers include time and financial

commitment, health, family and career responsibilities, lack of skills, lack of access to an instrument, and lack of interest and enjoyment. Generally, each of these barriers is controllable and participant decisions are based on a cost/benefit analysis. Health is generally the only barrier that is perceived as being beyond the control of the participants.

The notion of cost/benefit relationships is most prevalent in research involving theories based in leisure studies. Despite a person's initial motivation for participating, participation is sustained when the benefits exceed the costs of participating. In general, the time, financial, and emotional commitments are weighed against levels of satisfaction, accomplishment, and a sense that leisure time is being used constructively.

## Self-Determination Theory

The theoretical basis of the current study is based in self-determination theory. Self-determination theory (SDT) is a meta-theory that addresses the intrinsic and extrinsic motivators that facilitate and sustain participation (Ryan & Deci, 2000). Motivation has been recognized as an important factor in initiating and sustaining participation in music making, as well as participation in athletics, leisure activities, church, and continuing education. A sub-theory of SDT is *psychological needs theory*. According to Deci and Ryan, there are three basic psychological needs that all persons need satisfied to sustain participation in an activity: *Autonomy, Competence,* and *Relatedness*. *Autonomy* is degree to which people feel that they are in control of their own actions and acting of their own volition. *Competence* is the need people have to control outcomes. *Relatedness* is the need to be socially connected to other likeminded persons. These needs promote the

internalization and integration of behaviors. Deci and Ryan assert that the psychological needs of *Autonomy, Competence,* and *Relatedness* are universally essential to human functioning and personal growth (Deci & Ryan, 1985; Deci & Ryan, 2002; Ryan & Deci, 2002).

According to psychological needs theory, particular internal, external, and social contextual factors nurture the satisfaction of these needs, thus promoting intrinsic motivation to participate. Deci and Ryan (2000) acknowledge that there may be other needs that influence intrinsic motivation, but believe that *Autonomy, Competence,* and *Relatedness* are innate, fundamental, and basic. Researchers in many different disciplines have verified empirically the existence of *Autonomy, Competence,* and *Relatedness* (Deci & Ryan, 2002; Ryan & Deci, 2000).

**Self-Determination Theory and Music Participation**

While many researchers have examined issues related to motivation, only a few have examined issues specifically related to SDT and music participation. McAllister (1995) used elements of SDT to examine the effects of a controlling situation versus an informational situation on intrinsic motivation for instrumental- and vocal-music performance. A controlling situation was a situation where a teacher directed the students to complete a task. Conversely, an informational situation was a situation where students were under no obligation to complete the task. McAllister discovered that females were slightly more self-determined than males. Both females and males had relatively high

levels of intrinsic motivation in all treatment conditions (i.e., controlling, informational, and no-treatment).

Usingin aspects of SDT along with Acievement Goal Theory, Anguiano (2006) examined the motivational factors of middle school instrumental music students to continue participating in music during the next academic year. Anguiano, concluded that students who were more likely to continue in music were the students that developed greater levels of autonomy. In other words, students who demonstrated high rates of motivation were the students of teachers that promoted mastery of the material, and students who demonstrated low rates of motivation were the students of teachers who promoted flawless performances, competition, and grading. To this end, Anguiano reccommended that teachers help students develop autonomy and competence (mastery-goals) rather than flawless perfrormances (performace-goals). Furthermore, Anguiano recommended that teachers promote enjoyment and cooperation, rather than competetion, student comparisons, or student rankings in order to create a classroom climate more where students are able to become autonomous.

Evans (2009) conducted a longitudinal study of the motivations of 157 elementary through high school-aged, instrumental-music students in Australia. Participants were involved in research in the first, second, third, fifth, and 10th year of their music education. In the initial phase of the study, a profile of the participants' behaviors and beliefs was developed using a questionnaire and through interviews. To measure the extent to which psychological needs of autonomy, competence, and relatedness were

satisfied within the participants, Evans created a 24-item questionnaire based on the *Basic Psychological Needs Scale* (Deci & Ryan, 2009).

Evans tested the validity of the theoretical factors of autonomy, competence, and relatedness. Using confirmatory factor analysis, evidence was found to support the three factors. Additionally, evidence was found to support the existence of heteronomy and incompetence, the theoretical opposites of autonomy and competence, respectively. Evans concluded that the possible existence of additional factors did not invalidate the original theoretical model, but did adjust the model to include heteronomy and incompetence.

Evans identified a range of beliefs, values, attitudes, and behaviors among the respondents over the course of the study. Significant relationships were discovered between psychological needs, subjective task value, and beliefs and values associated with music learning, the benefits of music for life, and singing during the context of elementary-school band, which for most was their first experiences of formal music learning. Evans concluded that these relationships underscored the importance of early experiences in shaping beliefs and values toward participation in music activities. Evans also concluded that individuals for whom the psychological needs of autonomy, competence, and relatedness were satisfied valued music as important, useful, interesting, and enjoyable, and were more likely to continue to participate in music. Furthermore, participants that ceased participation in music demonstrated less satisfying feelings of autonomy, competence, and relatedness. The students that ceased participation also had

greater feelings of heteronomy and incompetence than the students that sustained participation did.

According to Deci and Ryan (2000), the development of SDT has been influenced by other theories of motivation, for example: Attribution Theory (Weiner, 1974), Achievement Goal Theory (Elliot & Church, 1997), and Flow Theory (Csikszenthihalyi, 1993). Attribution theory emphasizes how individuals *attribute* the causes of outcomes. The theory states that motivation stems from positive feelings derived from outcomes and that self-perceptions influence the manner in which persons interpret success or failures and ultimately the desire to continue pursuing a particular outcome.

Music education researchers have concluded that the students attribute success and failure primarily to effort and musical ability (Asmus, 1985, 1986a, 1986b; Costa-Giomi, 1989; Vispoel & Austin, 1995). Interestingly, Asmus (1985) concluded that highly motivated students tended to attribute success and failure to personal effort, while students with low motivation attributed success and failure to the lack of musical ability. In another study, Asmus (1986b) discovered that students attributed success and failure primarily to effort when rating others. When students rated themselves, however, they tended to attribute success and failure to the difficulty of the task.

Achievement Goal Theory (Elliot & Church, 1997) states that when students pursue a standard of excellence, they engage in goal-directed behavior. There are two types of goal-directed behavior: mastery and performance. Mastery goal-directed behavior involves mastering the material and developing competence relative to a personal, internal standard. Performance goal-directed behavior involves mastering the material

and developing competence relative to an external standard where a comparison can be made to abilities of others (i.e. attaining a high grade or ranking, or teacher approval). In other words, students who pursue mastery-goals are more interested in *developing* competence, whereas students who pursue performance-goals are more interested in *proving* competence.

There have been a few music education studies involving achievement goal theory. Anguiano (2006) found that among middle school students, those who demonstrated high rates of motivation to continue in music during the following academic school year were from programs that promoted mastery goal-directed behavior. Miksza (2007) discovered that among high school students, mastery goal-directed behavior was a strong predictor achievement in performance.

Flow theory (Csikszentmihalyi, 1993) states that persons are most satisfied when they experience a state of complete immersion in an activity: flow. In order to achieve flow, the skill level of the person and the difficulty of the task must be balanced. The state of flow implies a state of immersion, engagement, and fulfillment in which other needs and desires (e.g. time, hunger, fatigue, etc.) become unimportant.

There are few music education research studies involving flow. Custodero (1997) discovered that flow experiences occur in children as young pre-school aged students. In an investigation of high school choir students, Jaros (2008) discovered previous music experiences, repertoire selection, and rehearsal structure all affected the extent to which students experienced flow. In an investigation of university wind ensemble students, Krause (2003) discovered that flow experiences were more likely to occur during long

periods of performance activity and among older, more experienced students. In an examination of adult singers, Rybak (1995) concluded that adults were able to experience flow as long as the environment and leadership was sensitive to the abilities and needs of the participants. Krause (2003) and Rybak (1995) both concluded that achieving flow depended on a seamless music performance and that flow was disrupted if the participants lacked the necessary skills for a seamless music performance. Matthews (2003) concluded that improvisation activities facilitated flow experiences in beginning adult singers.

### Research on New Horizons International Music Association Ensembles

While there is research concerning older populations, research regarding participants in New Horizons Music ensembles is relatively new. This is not surprising since the first New Horizons Band (NHB) was not created until January of 1991 (Ernst & Emmons, 1992). Their existence in the research literature, however, is growing.

Black (1997) examined 37 beginning and intermediate concert bands, including New Horizons Bands, for adults over the age of 50 in U.S. Virgin Islands and Puerto Rico. Data were collected regarding rehearsals, funding, budget, instrumentation, literature, performances, special considerations, attrition, age limit, director information, and other such general information. There were some findings relevant to the current study. A majority of the bands surveyed reported an attrition rate of one to five members per year. Health reasons were the most commonly cited reason for the attrition. The directors most

commonly cited “fellowship” (p. 95) and enjoyment as the greatest benefits of participation.

In an effort to examine group learning dynamics and the ways in which adults use social networks, Dabback (2006) examined the nature of social interactions and networks in the context of a NHIMA band. Acting as a participant observer and using qualitative techniques, Dabback concluded that participants were motivated for the express purpose of engaging in communal music making. Furthermore, participants cited camaraderie as the greatest benefit of participation. For these participants, the band provided opportunities to preserve, as well as develop new, identities, goals, and purposes.

Dabback reported that participants exhibited intrinsic motivation to learn and develop musical skills for the mental, emotional, and physical benefits associated with being able to make music; his findings are consistent with other research (Coffman, 2002). Identity formation resulted not only from acquiring skills, but also from becoming a contributing member of a group. Participants also formed identities based on comparing themselves to others of similar ages who may not be as healthy. Inspiration was gained from the oldest members of the ensemble that continue to participate and learn despite their advanced ages. Many participants who had participated in musical activities during their youths reported reclaiming those identities. Alternatively, other participants reported being able to form identities that were denied them as children. For example, many women felt that gender stereotypes associated with specific instruments prevented them from fulfilling desires as children and NHIMA band represented an opportunity to correct some of the mistakes of their youth.

While intrinsic motivation may have accounted for the reasons why an individual decided to initiate participation within an ensemble, it did not account for all that compels participants to create and maintain the social networks that existed within the ensemble. In order to explain why participants cooperate and make decisions on behalf of one another, Dabback posited a theory of participation based in praxis and social phenomenon. He suggested that rather than motivation, it is the social interactions (i.e. camaraderie and mutual engagement) and the accumulation of social capital that stimulate identity formation. Identity formation is reliant, in part, by the sense of belonging that arose from being a contributing member to a group. Group identity was strengthened when members were expected to conform to a traditional or professional model of conduct. The ensemble employed a model of leadership and instruction common to most professional ensembles. Participants appeared to respect, and even expect, the hierarchical nature of ensemble leadership and didactic instruction. Therefore, a high degree of responsibility fell to the director to provide effective and efficient instruction to a large number of participants.

Dabback also reported that continued participation was due to the positive feelings and sense of purpose associated with bringing music to others. Many participants developed a sense of purpose by performing for seniors with limited mobility or who were confined to nursing homes or assisted living centers.

Also using qualitative research techniques, Kruse (2007) examined the motivations of NHIMA band participants. Kruse concluded that social dynamics and group experiences were instrumental in maintaining participation. Participant satisfaction stemmed from

musical difficulty, instructor teaching style, a sense of belonging to a larger community, and an awareness of the contribution of others. The informants in Kruse's study indicated that prior musical experiences were instrumental in developing the desire to continue to participate as adults. Positive health and self-perception play powerful roles in continued participation. Health problems emerged as the primary barrier to participation, again. Participants continually sought out creative ways to overcome the obstacles to participation.

Group identity emerged as a powerful component of participation. Established expectations of behavior and conduct strengthened the degree to which an individual identified with the group, as well as group cohesiveness. Kruse also discovered that many participants respected, and even expected, the hierarchical nature of ensemble leadership and didactic instruction. This was most true among the less skilled and those who maintained busier personal and professional lives. This was not true, however, among those who sought a variety of musical experiences, most notably chamber music experiences.

Coffman (1996) studied the prior musical experiences of NHIMA band participants. A 24-item open-ended questionnaire was completed by 35 NHIMA band participants. It was discovered that prior musical experiences, especially those from high school, had a positive influence on current participation. Furthermore, current participation did not seem to be influenced by the amount of time devoted to prior musical experiences. Many of the participants did not play an instrument during the intervening years between high school and retirement. Some, however, did participate in church choirs. The social

benefits of participating in an ensemble provided a strong drive to participate. Without an available ensemble, many were not motivated to sustain music making activities on their own. Social benefits were reinforced with positive memories of group activities, such as performing, traveling, and festivals, and negative memories regarding solitary practicing. These social implications notwithstanding, the participants also demonstrated a strong desire, as well as willingness to work hard, to achieve musically.

Coffman & Adamek (1999) studied the impact of NHB participation on the quality of life of the participants. A researcher-designed questionnaire that solicited open-ended responses as well as Likert-type ratings was used to collect data regarding demographics, perceived factors regarding the impact of participation on quality of life, reasons for participating, perceived benefits of participation, and the bands influence on various social and musical factors. Participants were nearly evenly divided between males and females, and seem to have more education than previous generations of retirees. The dominant motivations for joining the ensemble were both musical as well as social. Participants considered social interactions, a sense of well-being and accomplishment, and enriching and stimulating recreational activities as important factors in developing a positive quality of life.

Coffman & Adamek (2001) studied the perceived social support among NHB participants. Data regarding the various dimensions of social support was collected using a researcher-adapted form of the *Norbeck Social Support Questionnaire.* The researchers concluded that the participants predominantly demonstrated bonding (mutually

satisfying) relationships and a strong sense of community, as well as social and musical interdependence.

Rohwer (2005) studied adults beginning music instruction in an ensemble setting. She collected data from 35 NHIMA ensemble directors. The directors responded to 27 open-ended questions regarding current practices in their programs. Rohwer concluded that were many similarities between the current practices of the NHIMA ensembles and typical school ensembles. Despite these similarities, Rohwer also concluded that teaching adults did require a different "mindset" (p. 44). She suggested that directors of adult ensembles need to "soften the 'musical training' model… and encourage a 'musical journey' model where adults are invested in forging musical paths that lead toward meaningful destinations" (p. 44). Rohwer described the *musical journey model* as a model that balances adults' needs to learn, socialize, and feel good about themselves.

Rowher and Coffman (2006) studied the quality of life, spirituality, and health of adults NHIMA participants. Furthermore, the study also compared the leisure activity levels of NHIMA participants and non-participants. Band participants scored significantly greater on the Spirituality Scale than non-participants. A majority of subjects (69%) did not perceive any change in their health since joining the ensemble. The most commonly indicated benefits of band participation were improved mental health (13%) and lung capacity/breathing (9%).

Coffman (2007) studied the personality traits of NHIMA band participants. Specifically, Coffman was seeking to determine whether the personality traits of NHIMA band musicians were the same as professional musicians. Fifty-eight NHIMA band

participants completed a researcher-designed survey their musical backgrounds and the *Sixteen Personality Factor Questionnaire* (Cattell, 1973). The personality of NHIMA band participants, unlike the professional musicians, fell with in normal ranges. Personality traits most commonly found among the NHIMA band participants were deference, seriousness, trust, and willingness to take a chance, which, according to Coffman, contributed to their success in NHIMA band.

Rowher (2009) described and compared the perceptions of NHIMA and middle school band members. Sixty-six NHIMA and 28 middle school band participants answered a researcher-designed questionnaire on teaching effectiveness (i.e. musical skills, instructional skills, personality characteristics, perceptions of ensemble and music participation, and music preference). Both older and younger subjects rated personality characteristics the highest, followed by instructional skills and musical skills. Rowher concluded that both older and younger beginning musicians value teachers who are "positive, confident, motivational, and good leaders" (p. 72). Accordingly, Rowher recommended that educators apply teaching behaviors commonly used with adult students to school-aged students.

Coffman completed the most extensive study involving New Horizon participants to date. Coffman (2008) analyzed survey data from 1,652 (53% response rate) NHIMA members from the United States, Canada, and Ireland in an attempt to increase understanding of participant experiences. This study was the first phase in a longitudinal study with the purposes of (a) examining NHIMA participants past and current musical activities; (b) identifying the perceived benefits NHIMA participation; and (c)

establishing a baseline for a longitudinal study investigating the difference between musician's and non-musician's health. The survey had three sections: (a) musical experiences, (b) general health, and (c) demographics. The musical experience section was comprised of both closed- and open-ended items regarding the types and nature of past and current musical experiences. The general health section was adapted from on the *SF-36® Health Survey* (Ware, Kosinski, & Dewey, 2000) and the *National Health Interview Survey* (US Department of Health and Human Services, 2005) from the Centers for Disease Control and Prevention. The median age of participants was 68 with a range of 23 – 93; 46% were female and 54% male; members were almost exclusively Caucasian (98%); were generally college educated, and had above average incomes. Participants generally had previous playing experience on their instruments in high school; although nearly 30% were beginning instrumentalists, and women were more likely to be beginning instrumentalists than were men. Responses revealed that participants played their instruments an average of one hour a day. Participants generally perceived the emotional well-being benefits as being the primary benefits of participation, although physical well-being, cognitive stimulation, and socialization benefits of participation were also commonly cited.

## Summary of Research

Self-determination theory (SDT) seems to have important implications for music education and to issues related to music participation. Current research on music participation examines so many variables that an examination of fewer variables seems

beneficial. While researchers have acknowledged the attractiveness of SDT, only a few researchers have specifically used the theory as the foundation of their research. Music educators and music education researchers may profit from examining issues related to participation relative to the concepts of participants' autonomy, competence, and relatedness.

## Restatement of Purpose of the Study

The review of literature supports the need for additional information regarding: (a) participants of New Horizon International Music Association ensembles, (b) the extent to which persons participated musically during the intervening years between secondary school and participation in the New Horizons International Music Association music ensembles, which typically begins after 55 years of age, and (c) external variables that contribute to adult participation or non-participation in music. This review also demonstrates that researchers have examined a seemingly unlimited number of variables related to adult music participation. Although researchers agree that self-determination theory is an attractive theory, and potentially offers valuable insight into the motivations of those who participate in music (Kruse, 2007; Maehr, et al., 2002); few researchers have conducted investigations in SDT specifically.

The purpose of the study was to investigate the extent to which the psychological needs of adults, who participate in New Horizons International Music Association (NHIMA) ensembles, are being satisfied, and to examine the contributions of variables contributing to adults' participation in NHIMA ensembles. Additionally, the current

study was designed to determine relationships among satisfaction of psychological needs and variables associated with music participation. The current study was designed to accomplish the following research objectives.

1. Identify and describe the following background variables of adults who participate in New Horizons International Music Association ensembles.
    a. Past musical activities and behaviors
    b. Current music activities and behaviors
    c. Perceived benefits of participation
    d. Subjects' subjective well-being
    e. Perceived barriers to participation
    f. Demographic information.
        i. Age
        ii. Sex
        iii. Marital Status
        iv. Profession/Vocation
        v. Retirement Status
        vi. Income
        vii. Education
        viii. Ethnicity

2. Determine the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* are being satisfied within New Horizons International Music Association ensemble participants.

3. Determine the relationship among psychological needs and selected background variables within those who participate in New Horizons International Music Association ensembles.

# CHAPTER III

# PROCEDURES

Researchers have investigated many characteristics of adult participation in music making activities. A particular shortcoming of previous research is the attention given to a virtually unlimited number of variables. With the intent of developing a coherent description of adult motivations for music participation by using an economical or a parsimonious set of variables, the purpose of the current research was to examine the extent to which specific psychological needs (i.e., *Autonomy*, *Competence*, and *Relatedness*) are being satisfied among New Horizons International Music Association ensemble participants. New Horizons International Music Association (NHIMA) ensembles offer opportunities for adults to participate in music, and researchers are only beginning to examine NHIMA ensembles and participants. The current investigation contributes to the growing body of research on NHIMA ensembles, and to the general body of research on adult music participation.

## Selection of Subjects

Following the University of North Carolina at Greensboro Institutional Review Board approval of the current research (see Appendix A), letters soliciting participation in the study were sent to the directors or administrative bodies of the ensembles registered with New Horizons International Music Association ($N$ = 60; see Appendix B for a sample letter). From the ensembles electing to participate ($N$ = 18), two ensembles were selected

to participate in the development and piloting of the questionnaire used in the current study. Members from the remaining ensembles were solicited individually to participate in the final administration of the questionnaire ($N$ = 676). Participant consent was sought immediately before the administration of the questionnaire. Two hundred and thirty-seven NHIMA participants completed the questionnaire of the current study for a completion rate of 35%.

## Data Collection

### Development of Online Questionnaire

The review of literature guided the development of the online questionnaire of the current study. The research used to develop the questionnaire was limited to the examination of research related to: (a) current musical activities and behaviors, (b) past musical activities and behaviors, (c) perceived benefits to participation, (d) perceived barriers of participation, (e) subjective well-being, (f) demographic information, and (g) the extent to which psychological needs are being satisfied among adult music participants.

Development of the questionnaire began with a review of the literature that limited the focus of the research objectives, identified relevant issues and topics, and examined the form and content of existing survey instruments. A developmental draft of the questionnaire was created based on a review of the literature. Prior to the pilot administration of the initial questionnaire, a developmental draft was administered to a small sample of music participants to identify weaknesses of the questionnaire by

considering its clarity, comprehensiveness, and ease of administration. Based on participant responses, the draft was revised and submitted for expert review to confirm that the items appropriately and effectively addressed the research objectives, and that the questionnaire conformed to accepted research standards. Changes made to the questionnaire included minor grammatical and syntactical changes. Some participants indicated that they were either uncomfortable or unwilling to indicate their age and income, thus, the "I prefer not to say" option was added to the income and age items in the demographic section of the questionnaire. Appendix C includes the final draft of the questionnaire.

**Questionnaire Organization and Development**

In the ***first section*** of the questionnaire, subjects were required to indicate their past music participation. In the ***second section*** of the questionnaire, subjects were required to indicate their current level of music participation. In both sections, subjects were asked to rate, on a scale from 1 to 4, the frequency of their participation in various formal, non-formal, and informal musical activities. Points on the rating scale were associated with the following responses: (a) Often = 4, (b) Occasionally = 3, (c) Seldom = 2, and (d) Never = 1.

In the ***third section*** of the questionnaire, the psychological needs of autonomy, competency, and relatedness were explored using an adaption of the *Basic Psychological Needs Scale* (Deci & Ryan, 2009). The Deci and Ryan *Basic Psychological Needs Scale* (BPNS) consists of 21 items addressing needs satisfaction in general. Persons were asked

to respond to each item using a 7-point Likert-type rating scale ranging from “not true at all” to “very true,” with “somewhat true” as a mid-point. Higher scores represented higher needs satisfaction. Some items were worded negatively, in such cases the scores are reversed (e.g. 0 becomes 7, and 7 becomes 0) for data analysis purposes. Past research revealed that the scale had acceptable content validity and had acceptable reliability (e.g. Baard, Deci, & Ryan, 2004; Deci, et al., 2001; Evans, 2009; Gagné, 2003; Ilardi, Leone, Kasser, & Ryan, 1993; Kashdan, Julian, Merritt, & Uswatte, 2006; Kasser, Davey, & Ryan, 1992; La Guardia, Ryan, Couchman, & Deci, 2000).

Deci and Ryan (2009) stated that modifying the original 21 items to suit any particular context of activities, including research, was appropriate. In previous research, the original BPNS was modified to measure needs at work (Baard, et al., 2004; Deci, et al., 2001; Ilardi, et al., 1993; Kasser, et al., 1992), in relationships (La Guardia, et al., 2000), in sports (Lundberg, 2006), and in specific life circumstances (Gagné, 2003; Kashdan, et al., 2006). For example, the item “I feel pressured in my life” was changed, in the context of work, to “I feel pressured at work.” Consistent with the research by Deci and Ryan (2009), a measure of basic psychological needs in music scale was created for the current study based on the 21 items from the original BPNS. Table 1 shows how each item of the original BPNS was modified for music participation in the context of the current study.

**Table 1**

*Comparison Items with Basic Psychological Needs Scale (Deci & Ryan, 2009)*

| Basic Psychological Needs | Modification for Music |
|---|---|
| 1.I feel like I am free to decide for myself how to live my life. | 1. I feel like I am able to give input into how the ensemble functions. |
| 2.I really like the people I interact with. | 2. I really like the other members of my ensemble. |
| 3.Often, I do not feel very competent. | 3. Often, I do **not** feel very competent when I am performing and rehearsing. |
| 4.I feel pressured in my life. | 4. I feel pressured when I perform and rehearse. |
| 5.People I know tell me I am good at what I do. | 5. People I know tell me I am a good musician. |
| 6.I get along with people I come into contact with. | 6. I get along with the other members of the ensemble. |
| 7.I pretty much keep to myself and don't have a lot of social contacts. | 7. I keep to myself at rehearsals and performances, and don't have a lot of social interaction with the other members of the ensemble. |
| 8.I generally feel free to express my ideas and opinions. | 8. I am free to express my ideas and opinions about how the music is performed. |
| 9.I consider the people I regularly interact with to be my friends. | 9. I consider other members of the ensemble to be my friends. |
| 10.I have been able to learn interesting new skills recently. | 10. I have been able to develop new music skills recently. |
| 11.In my daily life, I frequently have to do what I am told. | 11. I frequently have to play the music the way I am told. |
| 12.People in my life care about me. | 12. Other members of the ensemble care about me. |
| 13.Most days I feel a sense of accomplishment from what I do. | 13. Most days I feel a sense of accomplishment from how I perform. |
| 14.People I interact with on a daily basis tend to take my feelings into consideration. | 14. The other members of the ensemble tend to take my feeling into consideration. |

(Continued)

**Table 1 (continued)**
*Comparison Items with Basic Psychological Needs Scale (Deci & Ryan, 2009)*

| Basic Psychological Needs | Modification for Music |
|---|---|
| 15.In my life I do not get much of a chance to show how capable I am. | 15. In rehearsals or performances, I do **not** get much of a chance to show how capable I am. |
| 16.There are not many people that I am close to. | 16. I am **not** close to the other members of the ensemble. |
| 17.I feel like I can pretty much be myself in my daily situations. | 17. When I am with the other members of my ensemble, I feel like I can pretty much be myself. |
| 18.The people I interact with regularly do not seem to like me much. | 18. Other members of my ensemble do **not** seem to like me much. |
| 19.I often do not feel very capable. | 19. When I am performing, I often do **not** feel very capable. |
| 20.There is not much opportunity for me to decide for myself how to do things in my daily life. | 20. There is **not** much opportunity for me to decide for myself how to perform the music. |
| 21.People are generally pretty friendly towards me. | 21. The other members of the ensemble are generally friendly towards me. |

Each item required subjects to use a rating of 1 to 7, ranging from "not true at all" (1) to "very true" (7), with a midpoint of "somewhat true" (4). A score for each psychological need was calculated by summing the ratings for the *Autonomy*, *Competence*, and *Relatedness* subscales. The *Autonomy* subscale consisted of items 1, 4, 8, 11, 17, 20, and 22. The *Competence* subscale consisted of items 3, 5, 10, 13, 15, and 19. The *Relatedness* subscale consists of items 2, 6, 7, 9, 12, 16, 18, and 21. Items 3, 4, 7, 11, 15, 16, 18, 19, 20, and 22 were negatively written, and therefore, reversed scoring was used for data analysis purposes. Each item was weighted equally. The adapted BNPS is the ***third section*** of the questionnaire included in Appendix C.

In the ***fourth section*** of the questionnaire administered in the current study, subjects responded to five items regarding the perceived benefits of participating in the NHIMA ensemble. Using the same rating scale as in the ***third*** section of the questionnaire, subjects rated the effects of NHIMA participation on: (a) musicianship, (b) overall health, (c) quality of life, (d) social life, and (e) family life.

In the ***fifth section***, subjects completed the *Satisfaction With Life Scale* (Diener, 1984). The *Satisfaction With Life Scale* (SWLS) is a five-item scale designed to measure subjective well-being. In an array of samples featuring a variety of ages, cultures, and professions, internal consistency coefficients for the SWLS were estimated at .87 and test-retest reliability estimates ranged from .83 to .50 (Arrindell, Meeuwesen, & Huyse, 1991; Pavot & Diener, 1993). The reliability of the SWLS was considered to be acceptable operationally for use as a measure of "subjective well being" in the current study. Pavot and Diener (1993) also concluded that the general content validity of the SWLS was demonstrated through normative data, indicating low satisfaction scores from groups such as prisoners, psychiatric patients, abused women, and students in poor and turbulent countries. Conversely, the SWLS normative data showed high satisfaction from samples of subjects selected from populations described as normal or as experiencing psychological and physiological well-being in life. Research on the construct validity of the SWLS revealed that scores from the SWLS were negatively correlated with measures of distress such as: depression ($r$ = -.72), anxiety ($r$ = -.54), negative affect ($r$ = -.48), and general psychological distress ($r$ = -.55) (e.g., Arrindell, Meeuwesen, & Huyse, 1991; Pavot & Diener, 1993).

In the ***sixth section*** of the questionnaire, subjects rated the extent to which particular aspects of their daily lives may interfere with their participation (Often = 4, Occasionally = 3, Seldom = 2, Never = 1). In the ***seventh section*** of the questionnaire, participants provided provide demographic information, including age, sex, marital status, profession/vocation, retirement status, income, education, and ethnicity.

The questionnaire for the current study was administered electronically, using *Qualtrics* (Qualtrics Labs Inc., 2009)—a commercial application service provider offering a range of services, including designing, administering, and managing online surveys. A number of researchers concluded that electronic surveys provide efficient, appropriate, and effective strategies for collecting data (Dixon & Turner, 2007; Roberts, 2007; Sue & Ritter, 2007; Ye, 2007). Generally, the aforementioned research revealed three advantages of using online questionnaires, including: (a) ease and inexpensiveness of distribution of a questionnaire to a large number of individuals; (b) the interactive nature of the internet allows respondents to be guided through completion of the questionnaire; and (c) the ease of reliably and accurately transferring data into a statistical software programs for analysis. Furthermore, researchers maintained that electronic surveys are equally as effective as pencil and paper surveys (Dixon & Turner, 2007; Roberts, 2007).

Although no previous research involving NHIMA participants used an online questionnaire, research revealed that persons from similar demographics as NHIMA participants possess the internet skills necessary to complete an online questionnaire. Researchers from the Pew Internet and American Life Project (Horrigan, 2009) reported

that Internet usage from all segments of society was increasing. Specifically, among adults age 50-64 years, home broadband internet usage increased 22% from 2008 to 2009 In a 2010 study, 70% of adults age 50-64 years reported that they use the Internet, 56% reported that they have a broadband internet connection in their homes, and 42% report that they access the Internet wirelessly from either a laptop or handheld device (Rainie, 2010). Representatives of NHIMA indicated that the Association extensively uses the Internet to communicate with participants. For example, NHIMA Representatives explained that association business is conducted through the NHIMA website (www.newhorizonsmusic.org), and newsletters are posted on the website to be downloaded by the membership.

A pilot draft of the online questionnaire used in the current study was pilot tested with a sample of NHIMA participants to identify strengths and weaknesses of item construction, administration procedures, and general data collection procedures. The content validity of the questionnaire was based on the review of literature in Chapter II, and on the research of Deci and Ryan (2009), of Arrindell, Meeuwesen, and Huyse (1991); of Diener (1984), and of Pavot and Diener (1993). The internal consistency or reliability of the questionnaire was estimated using Cronbach's coefficient alpha (1951), as reported in Chapter IV.

## Data Analysis

*Predictive Analytics SoftWare* (SPSS Inc., 2009) was used to analyze the data. Past and current musical activities, perceived barriers to participation, subjective well-being

(i.e., SWLS), perceived benefits of participation, and demographic information were reported as raw scores and percentages of participants who selected each activity and behavior.

To determine the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* were being satisfied, subjects' ratings on each psychological need were calculated by summing the ratings of their responses to items associated with the three subscales. The *Autonomy* subscale consisted of items 1, 4, 8, 11, 17, 20, and 22. The *Competence* subscale consisted of items 3, 5, 10, 13, 15, and 19. The *Relatedness* subscale consisted of items 2, 6, 7, 9, 12, 16, 18, and 21. Items 3, 4, 7, 11, 15, 16, 18, 19, 20, and 22 were negatively written, and therefore, were reversed scored for data analysis purposes. Each item was weighted evenly (e.g. 0 becomes 7, and 7 becomes 0). Internal consistency was determined using Cronbach's coefficient alpha (1951), as reported in Chapter IV.

Correlation analyses were used to determine relationships among past and current musical activities, perceived barriers to participation, subjective-well being (i.e., as measured by the SWLS), perceived benefits of participation, demographic information, and the satisfaction of psychological needs (i.e., as measured by the modified BPNS). Correlation coefficients revealed the direction and strength of the all relationships among the aforementioned variables.

To further investigate the relationships among the variable sets, and to determine the extent to which specific psychological needs (i.e., autonomy, competence, and relatedness) are being satisfied among New Horizons International Music Association

(NHIMA) ensemble participants, stepwise multiple regression analyses were used. Specifically, the stepwise multiple regression analyses were used to determine whether past and current musical activities and behaviors, perceived barriers to participation, and demographic variables predict the satisfaction of psychological needs among NHIMA ensemble participants. Specific predictor variables were past in-school activities and behaviors, past out-of-school activities and behaviors, current activities and behaviors, satisfaction with life (i.e., as measured by the SWLS items), benefits to participation, and barriers to participation. Criterion variables were defined by subjects' responses to items associated with the *Basic Psychological Needs in Music Scale* (BPNMS) and its subscales (i.e., *Autonomy*, *Competence*, and *Relatedness Subscales)*. An adjusted $R^2$ coefficient established the percentage of variance across the criterion variables that were explained by the predictor variables. Beta coefficients were used to determine the importance of each predictor. The Tolerance and Variance Inflation Factor (VIF) coefficients were used to check for assumptions of no multicollinearity. The Durbin-Watson statistic was used to determine whether the assumption of independent errors is tenable.

# CHAPTER IV

# ANALYSIS AND RESULTS

## Introduction

The purpose of the study was to investigate the extent to which the psychological needs of adults, who participate in New Horizons International Music Association (NHIMA) ensembles, are being satisfied, and to examine the contributions of variables contributing to adults' participation in NHIMA ensembles. Additionally, the current study was designed to determine relationships among satisfaction of psychological needs and variables associated with music participation.

Six hundred and seventy-six NHIMA participants were invited to complete the online survey. Of the 676 participants, 261 (38.61%) began the survey. Of those 261 participants, 244 (36.09%) affirmed their consent to participate in the study, 7 participants (1.04%) did not consent to participate in the study. Of the 244 participants, 17 (2.51%) were eliminated from the data analyses due to incomplete data. Therefore, the data analyses and findings of the current study were based on 35.06% of the original sample ($N$ = 637). A total of 237 participants provided acceptable responses to the online questionnaire, accounting for 100% of the tabulations of data analyses.

Chapter IV contains three sections and is organized by the three research objectives that guided the study. The first section describes the background variables of NHIMA

subjects. The second section describes the psychological needs of NHIMA participants. The third section describes relationships among the background variables and the psychological needs of NHIMA participants.

## Research Objective 1: Background Variables

The first research objective was to identify and describe the background variables of adults who participate in NHIMA ensembles. Background variables included subjects' past in- and out-of- school music participation, current participation, benefits of participation, and demographic information. Subjects also answered five questions regarding the perceived benefits of participating in an NHIMA ensemble and, responded to the items associated with the *Satisfaction With Life Scale* (SWLS) used to measure participants' subjective-well being.

### Subjects

Subjects' demographic data are presented in Tables 2 through 9. Because NHIMA ensembles originally were intended for persons at the age of 55 years or older (Ernst & Emmons, 1992), it was not surprising that 87.3% ($n$ = 207) of subjects were over the age of 55 years. There were slightly more females ($n$ = 124; 52.3%) than males ($n$ = 113; 47.7%). The majority of subjects were married ($n$ = 188; 79.3%), retired ($n$ = 154; 65.0%), and Caucasian ($n$ = 222; 93.7%). Nearly 80% ($n$ = 189; 79.80%) of subjects had earned at least a bachelor's degree, and 25 (10.5%) had earned a degree in music. Two hundred and eight (87.80%) subjects were either a members of a professional vocation or white-collar profession; 13 subjects (5.5%) were professional music educators, and 16

subjects (6.8%) were professional musicians. Forty-one subjects (17.3%) declined to indicate their income by selecting the option, “I prefer not to say.” Of the 196 (82.70%) subjects who indicated their incomes, they specified the range of their income levels. The two most frequently selected income levels were $100,000 or higher (*n* = 55; 23.2%) and $40,000 to $59,999 (*n* = 48; 20.3%).

**Table 2**
*Distribution of Sample by Age*

| Age | *n* | % |
|---|---|---|
| 18 - 24 | 0 | 0.0% |
| 25 - 34 | 3 | 1.3% |
| 35 - 44 | 3 | 1.3% |
| 45 - 54 | 24 | 10.1% |
| 55 - 64 | 93 | 39.2% |
| 65 - 74 | 84 | 35.4% |
| 75 and older | 30 | 12.7% |
| "Prefer not to say" | 0 | 0.0% |
| Total | 237 | 100.0% |

**Table 3**
*Distribution of Sample by Sex*

| Sex | *n* | % |
|---|---|---|
| Male | 113 | 47.7% |
| Female | 124 | 52.3% |
| Total | 237 | 100.0% |

**Table 4**
*Distribution of Sample by Marital Status*

| Marital Status | *n* | % |
|---|---|---|
| Single | 14 | 5.9% |
| Married | 188 | 79.3% |
| Divorced | 14 | 5.9% |
| Widowed | 21 | 8.9% |
| Total | 237 | 100.0% |

**Table 5**
*Distribution of Sample by Retirement Status*

| Retirement Status | *n* | % |
|---|---|---|
| Retired | 154 | 65.0% |
| Not Retired | 83 | 35.0% |
| Total | 237 | 100.0% |

**Table 6**
*Distribution of Sample by Profession*

| Profession | *n* | % |
|---|---|---|
| Professional Trade | 108 | 45.6% |
| White Collar | 100 | 42.2% |
| Blue Collar | 19 | 8.0% |
| Homemaker | 10 | 4.2% |
| Total | 237 | 100.0% |

*Note*. Thirteen persons ($n$ = 13; 5.5%) indicated that they were a professional music educator. Sixteen persons ($n$ = 16; 6.8%) indicated that they were a professional musician.

**Table 7**
*Distribution of Sample by Income*

| Income | *n* | % |
|---|---|---|
| $15,000 to $24,999 | 9 | 3.8% |
| $25,000 to $39,999 | 28 | 11.8% |
| 40,000 to $59,999 | 48 | 20.3% |
| $60,000 to $79,999 | 31 | 13.1% |
| 80,000 to $99,999 | 25 | 10.5% |
| $100,000 + | 55 | 23.2% |
| Preferred not to say. | 41 | 17.3% |
| Total | 237 | 100.0% |

**Table 8**
*Distribution of Sample by Education Level*

| Education Level | *n* | % |
|---|---|---|
| High Diploma | 26 | 11.0% |
| GED | 1 | 0.4% |
| Associate's Degree | 13 | 5.5% |
| Bachelor's Degree | 82 | 34.6% |
| Master's Degree | 80 | 33.8% |
| Doctorate | 27 | 11.4% |
| Vocational Degree | 7 | 3.0% |
| None | 1 | 0.4% |
| Total | 237 | 100.0% |

*Note.* Twenty-five persons ($n$ = 25; 10.5%) indicated they had a degree in music.

**Table 9**
*Distribution of Sample by Ethnicity*

| Ethnicity | *n* | % |
|---|---|---|
| African-American/Black | 4 | 1.7% |
| Asian-American/Asian | 4 | 1.7% |
| Caucasian/White | 222 | 93.7% |
| Mexican-American/Chicano | 2 | 0.8% |
| Other Latino | 1 | 0.4% |
| Native American | 0 | 00.0% |
| Other | 4 | 1.7% |
| Total | 237 | 100.0% |

**In-School Music Participation**

Data related to subjects' in-school music participation are presented in Tables 10 through 12; in the tables, results are presented as raw scores and percentages. Subjects indicated the grade level at which they participated in selected music activities (e.g. choir, band, orchestra, general music, etc.). General Music emerged as the most frequent in-school music activity. At some point during their education, more than 85% of the subjects participated in general music (*n* = 203; 85.65%). Band (*n* = 181; 76.37%) and choir (*n* = 154; 64.98%) were the second and third most frequently cited in-school activities, respectively. Subjects most frequently participated in general music during elementary school (*n* = 119; 50.21%) and middle school (*n* = 102; 42.86%). More than 50% of the subjects participated in band (*n* = 126; 53.16%) during high school. Music activities that involved working with music technology (*n* = 22; 9.28%), composing and arranging (32; 13.50%), improvising (32; 13.50%), and participating in chamber music (*n* = 39; 16.46%) were among the least frequently citied activities.

**Table 10**

*In-School Music Participation Rates – Grades 1 – 7 (N = 237)*

| | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 |
|---|---|---|---|---|---|---|---|
| General Music | 74 (31.2%) | 71 (30.0%) | 79 (33.3%) | 92 (38.8%) | 91 (38.4%) | 88 (37.1%) | 68 (28.7%) |
| Choir | 4 (1.7%) | 6 (2.5%) | 13 (5.5%) | 22 (9.3%) | 25 (10.5%) | 37 (15.6%) | 48 (20.3%) |
| Band | 0 (0.0%) | 0 (0.0%) | 4 (1.7%) | 16 (6.8%) | 48 (20.3%) | 64 (27.0%) | 77 (32.5%) |
| Orchestra | 1 (0.4%) | 1 (0.4%) | 1 (0.4%) | 2 (0.8%) | 7 (3.0%) | 4 (1.7%) | 10 (4.2%) |
| Chamber Ensemble | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) | 2 (0.8%) |
| Solo & Ensemble Festival | 0 (0.0%) | 1 (0.4%) | 0 (0.0%) | 1 (0.4%) | 3 (1.3%) | 9 (3.8%) | 21 (8.9%) |
| Honor Ensemble | 1 (0.4%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 2 (0.8%) | 4 (1.7%) |
| Composing/ Arranging | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) |
| Improvising | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) | 1 (0.4%) |
| Class Piano | 9 (3.8%) | 13 (5.5%) | 20 (8.4%) | 22 (9.3%) | 26 (11.0%) | 22 (9.3%) | 23 (9.7%) |
| Musical Theater | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) | 3 (1.3%) |
| Music History | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) | 2 (0.8%) | 1 (0.4%) | 2 (0.8%) | 4 (1.7%) |
| Music Theory | 3 (1.3%) | 3 (1.3%) | 3 (1.3%) | 4 (1.7%) | 6 (2.5%) | 9 (3.8%) | 10 (4.2%) |
| Music Technology | 0 (0.0%) | 1 (0.4%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.4%) |
| Music Appreciation | 74 (31.2%) | 71 (30.0%) | 79 (33.3%) | 92 (38.8%) | 91 (38.4%) | 88 (37.1%) | 68 (28.7%) |

**Table 11**
*In-School Music Participation Rates – Grades 9 – University (N = 237)*

| | Grade 8 | Grade 9 | Grade 10 | Grade 11 | Grade 12 | University |
|---|---|---|---|---|---|---|
| General Music | 60 (25.3%) | 45 (19.0%) | 37 (15.6%) | 35 (14.8%) | 54 (22.8%) | 45 (18.99%) |
| Choir | 49 (20.7%) | 57 (24.1%) | 59 (24.9%) | 60 (25.3%) | 74 (31.2%) | 50 (21.10%) |
| Band | 76 (32.1%) | 83 (35.0%) | 91 (38.4%) | 91 (38.4%) | 112 (47.3%) | 82 (34.60%) |
| Orchestra | 14 (5.9%) | 18 (7.6%) | 18 (7.6%) | 20 (8.4%) | 37 (15.6%) | 32 (13.50%) |
| Chamber Ensemble | 5 (2.1%) | 7 (3.0%) | 7 (3.0%) | 10 (4.2%) | 13 (5.5%) | 24 (10.13%) |
| Solo & Ensemble Festival | 27 (11.4%) | 42 (17.7%) | 50 (21.1%) | 54 (22.8%) | 80 (33.8%) | 13 (5.49%) |
| Honor Ensemble | 3 (1.3%) | 10 (4.2%) | 13 (5.5%) | 16 (6.8%) | 35 (14.8%) | 8 (3.38%) |
| Composing/ Arranging | 1 (0.4%) | 1 (0.4%) | 2 (0.8%) | 3 (1.3%) | 5 (2.1%) | 26 (10.97%) |
| Improvising | 3 (1.3%) | 3 (1.3%) | 7 (3.0%) | 6 (2.5%) | 14 (5.9%) | 18 (7.59%) |
| Class Piano | 20 (8.4%) | 12 (5.1%) | 9 (3.8%) | 6 (2.5%) | 8 (3.4%) | 25 (10.55%) |
| Musical Theater | 6 (2.5%) | 7 (3.0%) | 12 (5.1%) | 17 (7.2%) | 16 (6.8%) | 22 (9.28%) |
| Music History | 2 (0.8%) | 4 (1.7%) | 4 (1.7%) | 4 (1.7%) | 7 (3.0%) | 58 (24.47%) |
| Music Theory | 7 (3.0%) | 12 (5.1%) | 8 (3.4%) | 9 (3.8%) | 22 (9.3%) | 51 (21.52%) |
| Music Technology | 1 (0.4%) | 2 (0.8%) | 2 (0.8%) | 1 (0.4%) | 6 (2.5%)) | 15 (6.33%) |
| Music Appreciation | 60 (25.3%) | 45 (19.0%) | 37 (15.6%) | 35 (14.8%) | 54 (22.8%) | 90 (37.97%) |

**Table 12**

*In-School Music Participation Rates by School Level (N = 237)*

| | Elementary School (Gr 1 – 5) | Middle School (Gr 6 – 8) | High School (Gr 9 – 12) | Secondary School Total | University | Total |
|---|---|---|---|---|---|---|
| General Music | 119 (50.21%) | 102 (42.86%) | 70 (29.54%) | 178 (75.11%) | 45 (18.99%) | 203 (85.65%) |
| Choir | 28 (11.81%) | 69 (29.11%) | 97 (40.93%) | 136 (57.38%) | 50 (21.10%) | 154 (64.98%) |
| Band | 50 (21.10%) | 88 (37.13%) | 126 (53.16%) | 153 (64.56%) | 82 (34.60%) | 181 (76.37%) |
| Orchestra | 7 (2.95%) | 16 (6.75%) | 49 (20.68%) | 58 (24.47%) | 32 (13.50%) | 81 (34.18%) |
| Chamber Ensemble | 0 (0.00%) | 5 (2.11%) | 18 (7.59%) | 21 (8.86%) | 24 (10.13%) | 39 (16.46%) |
| Solo & Ensemble Festival | 4 (1.69%) | 34 (14.35%) | 99 (41.77%) | 110 (46.41%) | 13 (5.49%) | 117 (49.37%) |
| Honor Ensemble | 1 (0.42%) | 6 (2.53%) | 43 (18.14%) | 47 (19.83%) | 8 (3.38%) | 51 (21.52%) |
| Composing/ Arranging | 1 (0.42%) | 1 (0.42%) | 7 (2.95%) | 8 (3.38%) | 26 (10.97%) | 32 (13.50%) |
| Improvising | 1 (0.42%) | 3 (1.27%) | 19 (8.02%) | 20 (8.44%) | 18 (7.59%) | 32 (13.50%) |
| Class Piano | 40 (16.88%) | 32 (13.50%) | 14 (5.91%) | 55 (23.21%) | 25 (10.55%) | 77 (32.49%) |
| Musical Theater | 0 (0.00%) | 7 (2.94%) | 26 (10.97%) | 29 (12.24%) | 22 (9.28%) | 48 (20.25%) |
| Music History | 2 (0.84%) | 5 (2.11%) | 12 (5.06%) | 17 (7.17%) | 58 (24.47%) | 73 (30.80%) |
| Music Theory | 8 (3.38%) | 14 (5.91%) | 33 (13.92%) | 44 (18.57%) | 51 (21.52%) | 91 (38.40%) |
| Music Technology | 1 (0.42%) | 1 (0.42%) | 7 (2.95%) | 8 (3.38%) | 15 (6.33%) | 22 (9.28%) |
| Music Appreciation | 9 (3.80%) | 19 (8.02%) | 24 (10.13%) | 42 (17.72%) | 90 (37.97%) | 122 (51.48%) |

*Note*. The Secondary School Total and Total columns the total number of people participating in each activity a single person participated in a particular activity during multiple grade levels, he or she is counted only once in the Secondary School Total and Total columns.

**Out-of--School Music Participation**

Data related to subjects' out-of- school music participation are presented in Tables 13 and 14; in the tables, results are presented as raw scores and percentages. Subjects indicated the age level at which they participated in selected music activities (e.g. band, choir, orchestra, etc.). Across all age-levels, subjects most frequently participated in band (*n* = 202; 85.2%); this finding was not surprising since the majority of current NHIMA ensembles are bands. Over 75% of the subjects took private lessons (*n* =179; 75.5%). Over 60% of the subjects participated in choir (*n* = 149; 62.9%). More than 50% of the subjects gave solo performances (*n* = 125; 52.7%). Recording studio work was the least frequently cited out-of-school music activity (*n* = 23; 9.7%). No single music activity was cited by more than 50% of the subjects. The most frequently citied music activities were band (n = 111; 46.84%), solo performance (*n* = 86; 36.29%), choir (*n* = 83; 35.02%), and private instruction (*n* = 70; 29.54%) all during ages 14-18 years, the high school years.

**Table 13**
*Out-of-School Music Participation Rates by Ages 0 - 29 (N = 237)*

| | Ages | | | | | |
|---|---|---|---|---|---|---|
| | **0-5** | **6-10** | **11-13** | **14-18** | **19-22** | **23-29** |
| Choir | 0 (0.00%) | 29 (12.24%) | 55 (23.21%) | 83 (35.02%) | 40 (16.88%) | 26 (10.97%) |
| Band | 0 (0.00%) | 32 (13.50%) | 69 (29.11%) | 111 (46.84%) | 54 (22.78%) | 26 (10.97%) |
| Orchestra | 0 (0.00%) | 6 (2.53%) | 13 (5.49%) | 45 (18.99%) | 23 (9.70%) | 11 (4.64%) |
| Chamber Ensemble | 0 (0.00%) | 1 (0.42%) | 1 (0.42%) | 19 (8.02%) | 16 (6.75%) | 6 (2.53%) |
| Solo Performance | 1 (0.42%) | 14 (5.91%) | 29 (12.24%) | 86 (36.29%) | 22 (9.28%) | 18 (7.59%) |
| Composing/ Arranging | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 8 (3.38%) | 15 (6.33%) | 8 (3.38%) |
| Improvising | 0 (0.00%) | 2 (0.84%) | 3 (1.27%) | 15 (6.33%) | 13 (5.49%) | 8 (3.38%) |
| Ensemble Director | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 7 (2.95%) | 16 (6.75%) | 18 (7.59%) |
| Musical theater | 0 (0.00%) | 0 (0.00%) | 2 (0.84%) | 25 (10.55%) | 12 (5.06%) | 13 (5.49%) |
| Private Instruction | 10 (4.22%) | 57 (24.05%) | 77 (32.49%) | 70 (29.54%) | 30 (12.66%) | 18 (7.59%) |
| Summer music Camp | 0 (0.00%) | 1 (0.42%) | 9 (3.80%) | 40 (16.88%) | 6 (2.53%) | 3 (1.27%) |
| Garage Band | 0 (0.00%) | 0 (0.00%) | 2 (0.84%) | 20 (8.44%) | 5 (2.11%) | 3 (1.27%) |
| Recording Studio Work | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 2 (0.84%) | 1 (0.42%) | 3 (1.27%) |
| Professional Performer | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 10 (4.22%) | 13 (5.49%) | 11 (4.64%) |

**Table 14**
*Out-of-School Music Participation Rates by Ages 30 - 70+ (N = 237)*

| | Age | | | | | |
|---|---|---|---|---|---|---|
| | **30-39** | **40-49** | **50-59** | **60-69** | **70+** | **Total** |
| Choir | 27 (11.39%) | 29 (12.24%) | 30 (12.66%) | 26 (10.97%) | 17 (7.17%) | 149 (62.9%) |
| Band | 23 (9.70%) | 29 (12.24%) | 62 (26.16%) | 75 (31.65%) | 29 (12.24%) | 202 (85.2%) |
| Orchestra | 13 (5.49%) | 7 (2.95%) | 18 (7.59%) | 21 (8.86%) | 12 (5.06%) | 94 (39.7%) |
| Chamber Ensemble | 4 (1.69%) | 3 (1.27%) | 9 (3.80%) | 16 (6.75%) | 7 (2.95%) | 49 (20.7%) |
| Solo Performance | 12 (5.06%) | 13 (5.49%) | 20 (8.44%) | 22 (9.28%) | 10 (4.22%) | 125 (52.7%) |
| Composing/ Arranging | 6 (2.53%) | 8 (3.38%) | 9 (3.80%) | 12 (5.06%) | 4 (1.69%) | 33 (13.9%) |
| Improvising | 13 (5.49%) | 11 (4.64%) | 14 (5.91%) | 16 (6.75%) | 8 (3.38%) | 38 (16.0%) |
| Ensemble director | 13 (5.49%) | 13 (5.49%) | 14 (5.91%) | 13 (5.49%) | 8 (3.38%) | 37 (15.6%) |
| Musical theater | 13 (5.49%) | 6 (2.53%) | 6 (2.53%) | 5 (2.11%) | 5 (2.11%) | 55 (23.2%) |
| Private instruction | 20 (8.44%) | 21 (8.86%) | 38 (16.03%) | 33 (13.92%) | 11 (4.64%) | 179 (75.5%) |
| Summer music camp | 4 (1.69%) | 2 (0.84%) | 6 (2.53%) | 13 (5.49%) | 10 (4.22%) | 68 (28.7%) |
| Garage Band | 3 (1.27%) | 2 (0.84%) | 8 (3.38%) | 7 (2.95%) | 2 (0.84%) | 38 (16.0%) |
| Recording Studio Work | 3 (1.27%) | 3 (1.27%) | 5 (2.11%) | 3 (1.27%) | 3 (1.27%) | 23 (9.7%) |
| Professional Performer | 8 (3.38%) | 8 (3.38%) | 10 (4.22%) | 16 (6.75%) | 5 (2.11%) | 35 (14.8%) |

## Current Music Participation

Data related to subjects' current music participation are presented in Table 15. Subjects rated their music participation in each activity as "Often," "Occasionally," "Seldom," and "Never." The majority of subjects rated their participation in each music activity as "never" or "seldom." Music Activities most frequently cited as "often" were band ($n$ = 77; 32.5%) and choir ($n$ = 48; 20.3%).

**Table 15**
*Current Participation Descriptive Statistics (N = 237)*

| | Frequency | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Never (1)** | **Seldom (2)** | **Occasionally (3)** | **Often (4)** | **Mean** | **SD** | **Variance** |
| Choir | 154 (65.0%) | 21 (8.9%) | 14 (5.9%) | 48 (20.3%) | 1.81 | 1.221 | 1.491 |
| Band | 132 (55.7%) | 18 (7.6%) | 10 (4.2%) | 77 (32.5%) | 2.14 | 1.374 | 1.888 |
| Orchestra | 164 (69.2%) | 22 (9.3%) | 9 (3.8%) | 42 (17.7%) | 1.70 | 1.164 | 1.355 |
| Chamber Ensemble | 162 (68.4%) | 20 (8.4%) | 12 (5.1%) | 43 (18.1%) | 1.73 | 1.180 | 1.393 |
| Solo Performance | 155 (65.4%) | 25 (10.5%) | 18 (7.6%) | 39 (16.5%) | 1.75 | 1.154 | 1.332 |
| Composing & Arranging | 168 (70.9%) | 20 (8.4%) | 12 (5.1%) | 37 (15.6%) | 1.65 | 1.127 | 1.270 |
| Improvisation | 165 (69.6%) | 20 (8.4%) | 15 (6.3%) | 37 (15.6%) | 1.68 | 1.134 | 1.287 |
| Ensemble Directing | 167 (70.5%) | 19 (8.0%) | 12 (5.1%) | 39 (16.5%) | 1.68 | 1.146 | 1.313 |
| Musical Theater | 168 (70.9%) | 23 (9.7%) | 9 (3.8%) | 37 (15.6%) | 1.64 | 1.117 | 1.248 |
| Private Instruction | 152 (64.1%) | 24 (10.1%) | 20 (8.4%) | 41 (17.3%) | 1.79 | 1.174 | 1.379 |
| Garage Band | 168 (70.9%) | 20 (8.4%) | 11 (4.6%) | 38 (16.0%) | 1.66 | 1.134 | 1.285 |
| Family Music Time | 151 (63.7%) | 25 (10.5%) | 21 (8.9%) | 40 (16.9%) | 1.79 | 1.167 | 1.362 |
| Recording studio work | 171 (72.2%) | 21 (8.9%) | 9 (3.8%) | 36 (15.2%) | 1.62 | 1.108 | 1.228 |
| Professional performer | 167 (70.5%) | 20 (8.4%) | 11 (4.6%) | 39 (16.5%) | 1.67 | 1.143 | 1.306 |

## Barriers to Music Participation

Data related to subjects' perceived barriers to music participation are presented in Table 16. Subjects rated the extent to which each potential barrier prevented them from music participation by selecting "Not at All," "A little," "Somewhat," and "Very Much." None of the potential barriers emerged as a particularly strong music participation barrier. Scheduling conflicts emerged as the most frequently cited barrier, with 36% of the subjects ($n$ = 86) selecting either "somewhat" or "very much." Over 70% of the subjects

indicated either “not at all” or “a little” for all of the remaining music participation barriers.

**Table 16**
*Barriers to Music Participation Descriptive Statistics (N = 237)*

| | Frequency | | | | Mean | SD |
|---|---|---|---|---|---|---|
| | Not at All (1) | A little (2) | Somewhat (3) | Very Much (4) | | |
| Participation fee | 167 (70.5%) | 39 (16.5%) | 27 (11.4%) | 4 (1.7%) | 1.44 | .760 |
| Personal Finances | 155 (65.4%) | 48 (20.3%) | 26 (11.0%) | 8 (3.4%) | 1.52 | .821 |
| Scheduling conflicts | 57 (24.1%) | 94 (39.7%) | 64 (27.0%) | 22 (9.3%) | 2.22 | .916 |
| Distance to travel | 130 (54.9%) | 55 (23.2%) | 43 (18.1%) | 9 (3.8%) | 1.71 | .895 |
| Transportation problems | 190 (80.2%) | 28 (11.8%) | 15 (6.3%) | 4 (1.7%) | 1.30 | .662 |
| Professional Obligations | 131 (55.3%) | 56 (23.6%) | 31 (13.1%) | 19 (8.0%) | 1.74 | .969 |
| Personal Health | 131 (55.3%) | 56 (23.6%) | 31 (13.1%) | 19 (8.0%) | 1.46 | .739 |
| Family Obligations | 91 (38.4%) | 87 (36.7%) | 39 (16.5%) | 20 (8.4%) | 1.95 | .942 |
| Childcare | 227(95.8%) | 5(2.1%) | 4(1.7%) | 1 (0.4%) | 1.07 | .350 |
| Late Rehearsals | 178 (75.1%) | 41 (17.3%) | 13 (5.5%) | 5 (2.1%) | 1.35 | .682 |
| Long Rehearsals | 186 (78.5%) | 37 (15.6%) | 11 (4.6%) | 3 (1.3%) | 1.29 | .612 |
| Too Many Rehearsals | 169 (71.3%) | 54 (22.8%) | 9 (3.8%) | 5 (2.1%) | 1.37 | .661 |
| Loss of Enjoyment | 147 (62.0%) | 31 (13.1%) | 28 (11.8%) | 31 (13.1%) | 1.76 | 1.099 |
| Diminishing Skill Level | 140 (59.1%) | 62 (26.2%) | 25 (10.5%) | 10 (4.2%) | 1.60 | .841 |
| Director’s personality | 149 (62.9%) | 45 (19.0%) | 33 (13.9%) | 10 (4.2%) | 1.59 | .881 |
| Director’s competence | 152 (64.1%) | 29 (12.2%) | 38 (16.0%) | 18 (7.6%) | 1.67 | 1.001 |
| New director | 184 (77.6%) | 37 (15.6%) | 14 (5.9%) | 2 (0.8%) | 1.30 | .617 |
| No/little input into music selection | 165 (69.6%) | 60 (25.3%) | 10 (4.2%) | 2 (0.8%) | 1.36 | .606 |
| Music Difficulty (for individual) | 115 (48.5%) | 83 (35.0%) | 28 (11.8%) | 11 (4.6%) | 1.73 | .847 |
| Music Difficulty (for ensemble) | 114 (48.1%) | 86 (36.3%) | 29 (12.2%) | 8 (3.4%) | 1.71 | .810 |
| Music is too easy | 132 (55.7%) | 52 (21.9%) | 42 (17.7%) | 11 (4.6%) | 1.71 | .917 |
| Music is too often uninteresting or unexciting | 121 (51.1%) | 66 (27.8%) | 37 (15.6%) | 13 (5.5%) | 1.76 | .911 |
| Decrease in quality of the ensemble | 128 (54.0%) | 62 (26.2%) | 42 (17.7%) | 5 (2.1%) | 1.68 | .838 |
| Unsupportive environment | 138 (58.2%) | 34 (14.3%) | 41 (17.3%) | 24 (10.1%) | 1.79 | 1.059 |
| Too critical of environment | 144 (60.8%) | 37 (15.6%) | 35 (14.8%) | 21 (8.9%) | 1.72 | 1.017 |
| Unbalanced instrumentation/seating | 142 (59.9%) | 65 (27.4%) | 25 (10.5%) | 5 (2.1%) | 1.55 | .767 |

**Perceived Benefits of Music Participation**

Subjects answered five items regarding the perceived benefits of participating in an NHIMA ensemble, using a 7-point scale, ranging from "not true at all" (1) to "very true" (7), with a midpoint of "somewhat true" (4). Table 17 displays the descriptive statistics for the concepts associated with each item. Subjects' perceptions regarding the benefits of music participation were generally positive. The positive influence of music participation on family life received the highest rating with a mean of 5.698 (SD = .196), and on social life received the lowest rating with a mean of 4.711 (SD = .747).

**Table 17**
*Perceptions of Benefits Descriptive Statistics (N = 237)*

| Item | Range | Min | Max | Mean | SD |
|---|---|---|---|---|---|
| 1.Overall Musicianship | 6 | 1 | 7 | 5.23 | .304 |
| 2.Overall Health | 6 | 1 | 7 | 5.54 | .267 |
| 3.Quality of Life | 5 | 2 | 7 | 5.63 | .244 |
| 4.Family Life | 5 | 2 | 7 | 5.70 | .196 |
| 5.Social Life | 6 | 1 | 7 | 4.71 | .747 |

*Note*. Each item begins with *"My experiences in my NHIMA ensemble have had a positive influence on my…"*

**Subjective Well-Being**

Subjects completed *Satisfaction With Life Scale* (SWLS, Deiner, E., 1984), a five-item scale designed to measure subjective well-being. Each item was scored from 1 to 7, ranging from "not true at all" (1) to "very true" (7), with a midpoint of "somewhat true" (4). The composite SWLS score within the questionnaire was the sum of the five items.

Composite scores on the SWLS items ranged from 5 to 35, the full range of the scale. The mean score was 28.49 (SD = 5.43), and the SWLS items produced a Cronbach's coefficient alpha reliability of .86. According to Deiner, E. (1984 the author of the SWLS, the mean score for the sample of the current study revealed that individuals were mostly satisfied with life. Based on the mean score, life was considered to be enjoyable for participants, and the major domains of life (e.g. work, school, family, and friends) were going well. Not all domains of life, however, were perfect, but the growth and challenge inspired by the domains that remain unsatisfied positively contributed to the overall subjective well-being of the participants (Deiner, E., 1984).

**Research Objective 2: Satisfaction of Psychological Needs**

The second research objective was to determine the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* being satisfied within New Horizons International Music Association (NHIMA) ensemble participants. Subjects answered questionnaire items related to the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* being satisfied with NHIMA ensemble participants. The *Basic Psychological Needs in Music Scale* (BPNMS) consisted of 21 items designed to measure *Autonomy, Competence,* and *Relatedness*. Subjects responded to each item using a 7-point Likert-type rating scale, ranging from "not true at all" (1) to "very true" (7), with a midpoint of "somewhat true" (4). High scores (i.e., scores at or above 5 points) represented high needs satisfaction. Some items were worded negatively, in such cases the scores are reversed (e.g. 0 was changed to 7, and 7 was changed to 0). A score for

each subscale (i.e., Autonomy, Competence, and Relatedness) was calculated by summing the ratings for all the items associated each of the subscales. The *Autonomy* subscale consisted of items 1, 4, 8, 11, 17, 20, and 22. The *Competence* subscale consisted of items 3, 5, 10, 13, 15, and 19. The *Relatedness* subscale consisted of items 2, 6, 7, 9, 12, 16, 18, and 21. Items 3, 4, 7, 11, 15, 16, 18, 19, 20, and 22 were written negatively, and therefore, were reversed scored. Each item was weighted equally. Reliability was established using Cronbach's coefficient alpha (1951) for BPNMS, as well as for each of the subscales (see Table 18).

**Table 18**
*Reliability of Basic Psychological Needs in Music Scale (BPNMS)*

| | **Cronbach's Alpha** | **N of Items** |
|---|---|---|
| Composite BPNMS | .848 | 21 |
| Autonomy Subscale | .694 | 7 |
| Competence Subscale | .572 | 6 |
| Relatedness Subscale | .803 | 8 |

Table 19 displays descriptive statistics for subjects' responses to the BPNMS items. All scores were above the mid-point indicating that subjects' psychological needs were generally being satisfied. Subjects' need for relatedness was being satisfied the most, and the need for autonomy was being satisfied the least. The composite mean score of 5.294 indicated that subject's psychological needs are being slightly more than "somewhat" satisfied.

**Table 19**
*Descriptive Statistics for Psychological Needs in Music (N = 237)*

| | Range | Min | Max | Mean | SD |
|---|---|---|---|---|---|
| Composite BPNMS | 3.524 | 3.333 | 6.857 | 5.294 | .706 |
| Autonomy | 5.286 | 1.714 | 7.000 | 4.760 | .924 |
| Competence | 4.667 | 2.333 | 7.000 | 5.012 | .856 |
| Relatedness | 3.750 | 3.250 | 7.000 | 5.974 | .773 |

## Research Objective 3: Relationships among Psychological Needs and Background Variables

### Correlation Analyses

The third research objective addressed relationships among psychological needs, as measured by the BPNMS, and selected background variables of subjects who participated in NHIMA ensembles. As illustrated in Table 20, there were weak positive and negative correlations among the psychological needs and the demographic variables, with correlation coefficients ranging from -281. to .027. As demonstrated in Table 21, the relationship among the BPNMS responses and in-school music participation variables generally were positive and weak ($r$ = -.009 to .281). As supported by Table 22, there were positive and weak relationships among the BPNMS responses and out-of-school music participation variables ($r$ = .007 to .288).

**Table 20**
*Pearson-Product Moment Correlations among BPNMS and Demographic Variables*

| | BPNMS | Autonomy | Competence | Relatedness |
|---|---|---|---|---|
| Age | .013 | .005 | -.052 | .070 |
| Sex | .009 | -.001 | -.077 | .086 |
| Marital Status | -.037 | -.014 | -.047 | -.034 |
| Profession | -.024 | -.049 | -.027 | .015 |
| Music Educator | -.195** | -.200** | -.185** | -.104 |
| Professional Musician | -.278** | -.281** | -.249** | -.164* |
| Retired | -.123 | -.072 | -.102 | -.134 |
| Income | .013 | -.030 | .018 | .047 |
| Education | -.036 | -.009 | .036 | -.107 |
| Music Degree | -.209** | -.206** | -.215** | -.107 |
| Ethnicity | .041 | .036 | .027 | .039 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 21**
*Pearson-Product Moment Correlations among BPNMS and In-School Music Participation Variables*

| | BPNMS | Autonomy | Competence | Relatedness |
|---|---|---|---|---|
| General Music | .159* | .145* | .140* | .112 |
| Choir | .073 | .054 | .130 | .010 |
| Band | .102 | .092 | .170** | .006 |
| Orchestra | .013 | .027 | .106 | -.084 |
| Chamber Ensemble | .108 | .139* | .115 | .018 |
| Solo Ensemble Festival | .130 | .136* | .210 | -.005 |
| Honor Group | .176** | .201** | .223** | .027 |
| Composing and Arranging | .129 | .130 | .138 | .059 |
| Improvisation | .133* | .134* | .121 | .077 |
| Piano | .132* | .087 | .069 | .168 |
| Musical Theater | .115 | .101 | .150* | .044 |
| Music Theory | .060 | -.009 | .107 | .064 |
| Music Technology | .146* | .073 | .175** | .128* |
| Music Appreciation | .074 | .054 | .039 | .088 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 22**
*Pearson-Product Moment Correlations among BPNMS and Out-of-School Music Participation Variables*

| | BPNMS | Autonomy | Competence | Relatedness |
|---|---|---|---|---|
| Choir | .176** | .171** | .184** | .090 |
| Band | .264** | .288** | .265** | .111 |
| Orchestra | .111 | .094 | .194** | .007 |
| Chamber Music | .160* | .172** | .149* | .081 |
| Composing and Arranging | .173** | .168** | .256** | .027 |
| Improvisation | .204** | .230** | .165* | .111 |
| Ensemble Directing | .112 | .113 | .148* | .028 |
| Musical Theater | .259** | .288** | .209** | .147* |
| Private Lessons | .205** | .209** | .198** | .108 |
| Music Camp | .180** | .135* | .223** | .105 |
| *Garage Band* | .211** | .205** | .181** | .141* |
| Recording Studio Work | .164* | .110 | .187** | .121 |
| Professional Musician | .154* | .167* | .127 | .089 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 23 displays the coefficients derived from the correlation analyses of the data from subjects' responses to items associated with BPNMS, SWLS, and perceived benefits. All correlation coefficients were positive, and ranged from weak to moderately strong. The strongest relationship was between subjects' SWLS scores and the *Relatedness* subscale of the BPNMS ($r$ = .473). The weakest relationship was between subjects' responses to items associated with the perceived benefit of musicianship and the *Competence* subscale BPNMS ($r$ = .156).

Table 24 displays the coefficients derived from the correlation analyses of the data from subjects' responses to items associated with BPNMS and the current participation variables. There are positive and low relationships among all the variables, with correlation coefficients ranging from .012 to .232. While still weak, the strongest relationship was among subjects' responses to the items associated with the competence subscale of the BPNMS and the music participation variables.

**Table 23**
*Pearson-Product Moment Correlations among BPNMS, SWLS and Perceived Benefit Variables*

| | **BPNMS** | **Autonomy** | **Competence** | **Relatedness** |
|---|---|---|---|---|
| SWLS | .353** | .197** | .201** | .473** |
| Musicianship | .239** | .187** | .156* | .246** |
| Health | .293** | .230** | .209** | .288** |
| Quality of Life | .345** | .272** | .268** | .320** |
| Family Life | .298** | .250** | .195** | .290** |
| Social Life | .306** | .267** | .239** | .256** |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 24**
*Pearson-Product Moment Correlations among BPNMS and Current Music Participation Variables*

| | BPNMS | Autonomy | Competence | Relatedness |
|---|---|---|---|---|
| Choir | .123 | .131* | .167* | .019 |
| Band | .160* | .127 | .201** | .083 |
| Orchestra | .107 | .117 | .146* | .012 |
| Chamber Music | .185** | .157* | .232** | .086 |
| Solo Performance | .156* | .137* | .201** | .064 |
| Composing and Arranging | .148* | .134* | .181** | .063 |
| Improvisation | .168** | .164* | .199** | .066 |
| Directing | .143* | .138* | .172** | .055 |
| Musical | .152* | .146* | .172** | .067 |
| Private Instruction | .160* | .136* | .183** | .089 |
| "*Garage Band*" | .145* | .133* | .168** | .069 |
| *'family music time'* | .155* | .166* | .186** | .044 |
| Recording Studio Work | .133* | .144* | .149* | .044 |
| Professional Performance | .166* | .153* | .194** | .076 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table **25** displays the coefficients derived from the correlation analyses of the data from subjects' BPNMS scores and perceived barriers to music participation. Most correlation coefficients were negative and near zero, suggesting minimal, if any, relationship among subjects' psychological needs, as measured by the BPNMS, and their perceptions of barriers to music participation. While scheduling conflicts emerged as the most frequently cited barrier to music participation, music difficulty for individuals emerged as the strongest (inverse) correlation coefficient as associated with the BPNMS and the three subscales.

**Table 25**
*Pearson-Product Moment Correlations among BPNMS and Barriers to Music Participation*

| | Composite | Autonomy | Competence | Relatedness |
|---|---|---|---|---|
| Participation Fee | -.147* | -.111 | -.091 | -.161* |
| Personal Finances | -.135* | -.118 | -.079 | -.133* |
| Schedule Conflicts | -.166* | -.163* | -.083 | -.156* |
| Travel | -.154* | -.136* | -.085 | -.157* |
| Transportation | -.060 | -.007 | -.035 | -.107 |
| Work | -.039 | -.039 | .021 | -.070 |
| Health | -.066 | -.018 | -.038 | -.108 |
| Family | .048 | -.013 | .099 | .046 |
| Childcare | .052 | .052 | .066 | .016 |
| Late Rehearsals | -.081 | -.069 | -.109 | -.030 |
| Long Rehearsals | -.106 | -.070 | -.122 | -.079 |
| Too Many Rehearsals | -.041 | .008 | -.079 | -.041 |
| Loss of Enjoyment | -.171** | -.175** | -.128* | -.120 |
| Diminishing Skills | -.234** | -.196** | -.198** | -.191** |
| Director's Personality | -.105 | -.130* | .010 | -.123 |
| Director's Competence | -.035 | -.043 | .018 | -.054 |
| New Director | -.044 | -.101 | .065 | -.054 |
| Input into Music | -.114 | -.081 | -.019 | -.174** |
| Music Difficulty (for individual) | -.447** | -.392** | -.414** | -.317** |
| Music Difficulty (for ensemble) | -.261** | -.214** | -.177** | -.255** |
| Music is too Easy | .076 | .065 | .206** | -.058 |
| Music is Uninteresting | -.048 | -.029 | .034 | -.112 |
| Quality of Ensemble | -.007 | -.024 | .078 | -.057 |
| Unsupportive Environment | -.045 | -.087 | .011 | -.027 |
| Overly Critical Environment | -.069 | -.113 | -.022 | -.029 |
| Instrumentation | -.065 | -.083 | -.008 | -.061 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

## Stepwise Multiple Regression of In-School Music Participation and BPNMS

A stepwise multiple regression analysis was used to determine the extent to which the 15 in-school music participation variables predicted the satisfaction of subjects' psychological needs, as measured by the BPNMS. Table 26 summarizes the regression model for subjects' BPNMS scores, operationally used to define satisfaction of subjects' overall psychological needs for *Autonomy*, *Competence*, and *Relatedness*. Participation in

honor music groups significantly contributed to the prediction of subjects' BPNMS scores ($p$ = .006), and was added to the stepwise multiple regression equation. None of the other in-school music participation variables made significant contributions ($p \geq .05$) to the satisfaction of subjects' psychological needs, and were excluded from the multiple regression analysis.

**Table 26**
*Summary of the Regression Model for the BPNMS (N = 237)*

| Model | $R$ | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | $F$ Change | df1 | df2 | Sig. $F$ Change | |
| 1 | .176[a] | .031 | .027 | .696 | .031 | 7.541 | 1 | 235 | .006 | 1.935 |

a. Predictors: (Constant), Participation in Honor Music Groups

The amount of variance in the BPNMS scores explained by subjects' participation in honor music groups was 2.7%. Participation in honor music groups significantly predicted the extent to which subjects' psychological needs for *Autonomy, Competence,* and *Relatedness* were being satisfied ($s^2$% = 2.7%; $p$ = .006). The Durbin-Watson statistic of 1.935 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 26).

The prediction equation from the stepwise multiple regression analysis is presented in Table 27. For every increase in honor music group participation ($\beta$ = .140), the degree to which subjects' psychological needs for *Autonomy, Competence,* and *Relatedness* were

satisfied increased by 14%. Collinearity diagnostics are presented in Table 28. The Tolerance and Variance Inflation Factor (VIF) coefficients indicate collinearity was not a concern for this model.

**Table 27**
*Prediction Equation for Stepwise Multiple Regression for the BPNMS*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | *β* |
| 1 | (Constant) | 5.245 | .049 | | 107.713 | .000 |
| | Participation in Honor Music Groups | .140 | .051 | .176 | 2.746 | .006 |

**Table 28**
*Collinearity Statistics of Predictor Variables on the BPNMS*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tolerance | VIF |
| 1 | (Constant) | | | | | |
| | Participation in Honor Music Groups | .176 | .176 | .176 | 1.000 | 1.000 |

The excluded variables in the stepwise multiple regression analysis are presented in Table 29. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as

measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 29**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | General Music | .127[a] | 1.945 | .053 | .126 | .955 | 1.047 |
| | Choir | .049[a] | .750 | .454 | .049 | .980 | 1.021 |
| | Band | .047[a] | .687 | .492 | .045 | .883 | 1.132 |
| | Orchestra | -.045[a] | -.661 | .509 | -.043 | .907 | 1.102 |
| | Chamber Music | .062[a] | .919 | .359 | .060 | .915 | 1.092 |
| | Solo/Ensemble Festival | .078[a] | 1.143 | .254 | .074 | .880 | 1.137 |
| | Composing /Arranging | .072[a] | 1.040 | .299 | .068 | .854 | 1.171 |
| | Improvisation | .080[a] | 1.171 | .243 | .076 | .875 | 1.143 |
| | Class Piano | .125[a] | 1.952 | .052 | .127 | .998 | 1.002 |
| | Musical Theater | .091[a] | 1.406 | .161 | .092 | .979 | 1.021 |
| | Music History | .055[a] | .848 | .397 | .055 | .996 | 1.004 |
| | Music Theory | .051[a] | .795 | .427 | .052 | .997 | 1.003 |
| | Music Technology | .114[a] | 1.741 | .083 | .113 | .956 | 1.046 |
| | Music Appreciation | .052[a] | .801 | .424 | .052 | .983 | 1.017 |

a. Predictors in the Model: (Constant), Participation in Honor Music Groups
b. Dependent Variable: Psychological Needs Composite Score

**Stepwise Multiple Regression of In-School Music Participation and Autonomy**

A stepwise multiple regression analysis was used to determine the extent to which the 15 in-school music participation variables predicted the satisfaction of subjects' need for *Autonomy*, as measured by their scores on *Autonomy* subscale of the BPNMS. Table 30 summarizes the regression model for the BPNMS *Autonomy* scores, operationally used to

define satisfaction of subjects' psychological need for *Autonomy*. Participation in honor music groups significantly contributed to the prediction of subjects' *Autonomy* scores ($p = .002$) and was added to the stepwise multiple regression equation. None of the other in-school music participation variables made significant contributions to satisfying subjects' need for *Autonomy* ($p \geq .05$) and were excluded from the multiple regression analysis.

**Table 30**
*Summary of the Stepwise Multiple Regression Model for the Autonomy Subscale (N = 237)*

| Model | $R$ | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | $F$ Change | df1 | df2 | Sig. $F$ Change | |
| 1 | .201[a] | .041 | .036 | .9071166 | .041 | 9.930 | 1 | 235 | .002 | 1.908 |

a. Predictors: (Constant), Participation in Honor Music Groups

The amount of variance in the *Autonomy* scores explained by subjects' participation in honor music groups was 3.6%. Participation in honor music groups significantly predicted the extent to which subjects' psychological need for *Autonomy* was satisfied ($s^2\% = 3.6\%$; $p = .002$). The Durbin-Watson statistic of 1.908 demonstrates that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 30).

The prediction equation from the stepwise multiple regression is presented in Table 31. For every increase in honor music group participation ($\beta = .209$), the degree to which

subjects' psychological need for *Autonomy* was satisfied increased by 20.9%. Collinearity statistics are presented in Table 32. The Tolerance and VIF coefficients indicate collinearity is not a concern for the model.

**Table 31**
*Prediction Equation for Stepwise Multiple Regression for the Autonomy Subscale*

| Model | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|
| | ***β*** | **Std. Error** | ***β*** | | |
| 1 (Constant) | 4.686 | .063 | | 73.841 | .000 |
| Participation in Honor Groups | .209 | .066 | .201 | 3.151 | .002 |

**Table 32**
*Collinearity Statistics of Predictor Variables on the Autonomy Subscale*

| Model | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|
| | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 (Constant) | | | | | |
| Participation in Honor Music Groups | .201 | .201 | .201 | 1.000 | 1.000 |

The excluded variables in the stepwise multiple regression model are presented in Table 33. None of the variables in Table 33 were significant predictors of subjects' *Autonomy* scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the

criterion variable, as measured by the BPNMS *Autonomy* scores. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 33**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | General Music | .107[a] | 1.640 | .102 | .107 | .955 | 1.047 |
| | Choir | .026[a] | .398 | .691 | .026 | .980 | 1.021 |
| | Band | .026[a] | .388 | .698 | .025 | .883 | 1.132 |
| | Orchestra | -.038[a] | -.566 | .572 | -.037 | .907 | 1.102 |
| | Chamber Music | .087[a] | 1.309 | .192 | .085 | .915 | 1.092 |
| | Solo/Ensemble Festival | .075[a] | 1.097 | .274 | .072 | .880 | 1.137 |
| | Composing /Arranging | .062[a] | .890 | .374 | .058 | .854 | 1.171 |
| | Improvisation | .072[a] | 1.047 | .296 | .068 | .875 | 1.143 |
| | Class Piano | .078[a] | 1.227 | .221 | .080 | .998 | 1.002 |
| | Musical Theater | .074[a] | 1.145 | .254 | .075 | .979 | 1.021 |
| | Music History | .039[a] | .605 | .546 | .039 | .996 | 1.004 |
| | Music Theory | -.020[a] | -.305 | .761 | -.020 | .997 | 1.003 |
| | Music Technology | .032[a] | .490 | .625 | .032 | .956 | 1.046 |
| | Music Appreciation | .028[a] | .434 | .664 | .028 | .983 | 1.017 |

a. Predictors in the Model: (Constant), Participation in Honor Music Groups
b. Dependent Variable: Autonomy Subscale

**Stepwise Multiple Regression of In-School Music Participation and Competence**

A stepwise multiple regression was used to determine the extent to which the 15 in-school music participation variables predicted the satisfaction of subjects' need for *Competence*, as measured by their scores on the *Competence* subscale of the BPNMS.

Table 34 summarizes the regression model for the BPNMS scores on *Competence* subscale, operationally used to define satisfaction of subjects' psychological need for *Competence*. In the final model, participation in honor music groups, and in solo and ensemble festivals significantly contributed to the prediction of subjects' *Competence* scores ($p = .026$) and were added to the stepwise multiple regression equation. None of the other in-school music participation variables significantly contributed to satisfying subjects' need for *Competence* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 34**
*Summary of the Regression Model for the Competence Subscale (N = 237)*

| Model | $R$ | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | $F$ Change | df1 | df2 | Sig. $F$ Change | |
| 1 | .223[a] | .050 | .046 | .8366987 | .050 | 12.270 | 1 | 235 | .001 | |
| 2 | .264[b] | .070 | .062 | .8296611 | .020 | 5.004 | 1 | 234 | .026 | 1.914 |

a. Predictors: (Constant), Participation in Honor Music Groups
b. Predictors: (Constant), Participation in Honor Groups, Participation in Solo & Ensemble Festival

In the first model, the amount of variance in the Competence scores explained by subjects' participation in honor music groups was 4.6%. Participation in honor music groups significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2\% = 4.6\%$; $p = .001$).

The variable, participation in solo and ensemble festivals was added to the stepwise multiple regression analysis. In the second and final model, 6.2% of the variance in subjects' *Competence* scores was explained by the differences in subjects' participation in honor music groups, and solo and ensemble festivals. Participation in honor music groups and solo and ensemble festivals significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2\% = 6.2\%$; $p = .026$). The Durbin-Watson statistic of 1.914 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 34).

The prediction equation from the stepwise multiple regression is presented in Table 35. For every increase in honor music group participation ($\beta = .215$), the degree to which subjects' psychological need for competence was satisfied increased by 21.5%

Participation in honor music groups and participation in solo and ensemble festivals were both significant predictors of subjects' *Competence* scores. Participation in honor music groups ($t = 2.538$) had a slightly greater effect on satisfying subjects' psychological need for *Competence* than participation in solo and ensemble festivals ($t = 2.237$). In the second regression model, for every increase in honor music group participation ($\beta = .165$), the degree to which subjects' psychological need for *Competence* was satisfied increased by 16.5%, when participation in solo and ensemble festivals was held constant. Alternatively, when honor music group participation was held constant, for every increase in solo and ensemble participation ($\beta = .071$), the degree to which subjects' psychological need for *Competence* was satisfied increased by 7.1%.

**Table 35**
*Prediction Equation for Stepwise Multiple Regression for the Competence Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 4.936 | .059 | | 84.326 | .000 |
| | Participation in Honor Music Groups | .215 | .061 | .223 | 3.503 | .001 |
| 2 | (Constant) | 4.867 | .066 | | 74.199 | .000 |
| | Participation in Honor Music Groups | .165 | .065 | .171 | 2.538 | .012 |
| | Participation in Solo & Ensemble Festival | .071 | .032 | .150 | 2.237 | .026 |

There was minimal overlap between the predictor variables. There was a significant, low positive correlation between the participation in honor groups and participation in solo and ensemble festivals ($r = .347$; $p < .000$). Collinearity statistics are presented in Table 36. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for this model.

**Table 36**
*Collinearity Statistics of Predictor Variables on the Competence Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Participation in Honor Music Groups | .223 | .223 | .223 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Participation in Honor Music Groups | .223 | .164 | .160 | .880 | 1.137 |
| | Participation in Solo & Ensemble Festival | .210 | .145 | .141 | .880 | 1.137 |

The excluded variables in the stepwise multiple regression model are presented in Table 37. None of the variables in Table 37 were significant predictors of subjects' Competence scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS *Competence* scores. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 37**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | General Music | .097[a] | 1.498 | .135 | .097 | .955 | 1.047 |
| | Choir | .100[a] | 1.564 | .119 | .102 | .980 | 1.021 |
| | Band | .106[a] | 1.573 | .117 | .102 | .883 | 1.132 |
| | Orchestra | .042[a] | .625 | .532 | .041 | .907 | 1.102 |
| | Chamber Music | .055[a] | .823 | .412 | .054 | .915 | 1.092 |
| | Solo/Ensemble Festival | .150[a] | 2.237 | .026 | .145 | .880 | 1.137 |
| | Composing /Arranging | .061[a] | .893 | .373 | .058 | .854 | 1.171 |
| | Improvisation | .048[a] | .708 | .480 | .046 | .875 | 1.143 |
| | Class Piano | .059[a] | .932 | .353 | .061 | .998 | 1.002 |
| | Musical Theater | .120[a] | 1.882 | .061 | .122 | .979 | 1.021 |
| | Music History | .025[a] | .390 | .697 | .026 | .996 | 1.004 |
| | Music Theory | .096[a] | 1.510 | .132 | .098 | .997 | 1.003 |
| | Music Technology | .134[a] | 2.070 | .040 | .134 | .956 | 1.046 |
| | Music Appreciation | .011[a] | .165 | .869 | .011 | .983 | 1.017 |
| 2 | General Music | .056[b] | .813 | .417 | .053 | .851 | 1.175 |
| | Choral Ensemble | .058[b] | .855 | .393 | .056 | .864 | 1.157 |
| | Band | .051[b] | .693 | .489 | .045 | .723 | 1.384 |
| | Orchestra | .047[b] | .703 | .483 | .046 | .906 | 1.104 |
| | Chamber Music | .048[b] | .725 | .469 | .047 | .913 | 1.095 |
| | Composing /Arranging | .051[b] | .748 | .455 | .049 | .850 | 1.176 |
| | Improvisation | .038[b] | .560 | .576 | .037 | .871 | 1.148 |
| | Class Piano | .051[b] | .805 | .422 | .053 | .994 | 1.006 |
| | Musical Theater | .097[b] | 1.492 | .137 | .097 | .943 | 1.060 |
| | Music History | .010[b] | .151 | .880 | .010 | .984 | 1.016 |
| | Music Theory | .088[b] | 1.391 | .165 | .091 | .994 | 1.006 |
| | Music Technology | .115[b] | 1.777 | .077 | .116 | .936 | 1.069 |
| | Music Appreciation | .006[b] | .093 | .926 | .006 | .982 | 1.018 |

a. Predictors in the Model: (Constant), Participation in Honor Music Groups
b. Predictors in the Model: (Constant), Participation in Honor Music Groups, Participation in Solo & Ensemble Festival
c. Dependent Variable: Competence Subscale

**Stepwise Multiple Regression of In-School Music Participation and Relatedness**

A stepwise multiple regression analysis was used to determine the extent to which the 15 in-school music participation variables predicted the satisfaction of subjects' needs for *Relatedness*, as measured by their scores on the BPNMS *Relatedness* subscale. Table 38 summarizes the regression model for the BPNMS scores on the *Relatedness* subscale, operationally used to define satisfaction of subjects' psychological need for *Relatedness*. In the final model, participation in class piano and music technology significantly contributed to the prediction of subjects' *Relatedness* scores ($p = .033$), and was added to the stepwise multiple regression equation. None of the other in-school music participation variables made significant contributions to satisfying subjects' need for *Relatedness* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 38**
*Summary of the Regression Model for the Relatedness Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .168[a] | .028 | .024 | .764 | .028 | 6.858 | 1 | 235 | .009 | |
| 2 | .217[b] | .047 | .039 | .758 | .019 | 4.610 | 1 | 234 | .033 | 1.986 |

a. Predictors: (Constant), Participation in Class Piano
b. Predictors: (Constant), Participation in Class Piano, Participation in Music Technology

In the first model, the amount of variance in the *Relatedness* scores explained by subjects' participation in class piano was 2.4%. Participation in class piano significantly

predicted the extent which subjects' psychological need for *Relatedness* was satisfied ($s^2$% = 2.4%; $p$ = .009).

The variable, participation in music technology was added to the stepwise multiple regression analysis. In the second and final model, 3.9% of the variance subjects' *Relatedness* scores was explained by the differences in subjects' participation in class piano and music technology. Participation in class piano and music technology significantly predicted the extent to which subjects' psychological need for *Relatedness* was satisfied ($s^2$% = 3.9%; $p$ = .033). The Durbin-Watson statistic of 1.986 showed that the residuals were uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 38).

The prediction equation from the stepwise multiple regression is presented in Table 39. In the first model, participation in class piano significantly contributed to the satisfaction of subjects' psychological need for *Relatedness* ($p$ = .009). For every increase in class piano participation ($\beta$ = .063), the degree to which subjects' psychological need for relatedness was satisfied increased by 6.3%.

In the second and final model, participation in class piano ($p$ = .006) and participation in music technology ($p$ = .033) significantly contributed to the satisfaction of subjects' psychological need for *Relatedness*. Participation in class piano ($t$ = 2.747) had a slightly greater effect on satisfying subjects' psychological need for *Relatedness* than participation in music technology ($t$ = 2.147). In the final regression model, for every increase in class piano participation ($\beta$ = .066), the degree to which subjects' psychological need for *Relatedness* was satisfied increased by 6.6%, when participation

in music technology was held constant. Alternatively, when class piano participation was held constant, for every increase in music technology participation ($\beta$ = .292), the degree to which subjects' psychological need for *Relatedness* was satisfied increased by 29.2%.

**Table 39**
*Prediction Equation for Stepwise Multiple Regression for Relatedness Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 5.923 | .053 | | 111.206 | .000 |
| | Participation in Class Piano | .063 | .024 | .168 | 2.619 | .009 |
| 2 | (Constant) | 5.904 | .054 | | 110.093 | .000 |
| | Participation in Class Piano | .066 | .024 | .176 | 2.747 | .006 |
| | Participation in Music Technology | .292 | .136 | .137 | 2.147 | .033 |

There was minimal overlap between the predictor variables. There was a weak, negative correlation between the participation in class piano and participation in music technology; yet, the correlation coefficient was not significant ($r$ = -.052; $p$ =.424). Collinearity statistics are presented in Table 40. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for this model.

**Table 40**
*Collinearity Statistics of Predictor Variables of the Relatedness Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Participation in Class Piano | .168 | .168 | .168 | 1.000 | 1.000 |
| 2 | (Constant) | .168 | .177 | .175 | .997 | 1.003 |
| | Participation in Class Piano | .128 | .139 | .137 | .997 | 1.003 |
| | Participation in Music Technology | .168 | .168 | .168 | 1.000 | 1.000 |

The excluded variables in the stepwise multiple regression model are presented in Table 41. None of the variables in Table 41 were significant predictors of subjects' *Relatedness* scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS *Relatedness* scores. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 41**

*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | General Music | .076[a] | 1.143 | .254 | .075 | .940 | 1.063 |
| | Choral Ensemble | -.025[a] | -.375 | .708 | -.025 | .960 | 1.042 |
| | Band | -.007[a] | -.104 | .917 | -.007 | .994 | 1.006 |
| | Orchestra | -.089[a] | -1.379 | .169 | -.090 | .999 | 1.001 |
| | Chamber Music | .007[a] | .114 | .910 | .007 | .996 | 1.004 |
| | Solo & Ensemble Festival | -.017[a] | -.262 | .794 | -.017 | .995 | 1.005 |
| | Honor Groups | .019[a] | .297 | .767 | .019 | .998 | 1.002 |
| | Composing and Arranging | .058[a] | .902 | .368 | .059 | 1.000 | 1.000 |
| | Improvisation | .058[a] | .891 | .374 | .058 | .985 | 1.015 |
| | Musical Theater | .011[a] | .164 | .870 | .011 | .960 | 1.041 |
| | Music History | .058[a] | .900 | .369 | .059 | .994 | 1.006 |
| | Music Theory | .000[a] | .004 | .997 | .000 | .854 | 1.170 |
| | Music Technology | .137[a] | 2.147 | .033 | .139 | .997 | 1.003 |
| | Music Appreciation | .071[a] | 1.095 | .275 | .071 | .988 | 1.012 |
| 2 | General Music | .087[b] | 1.320 | .188 | .086 | .935 | 1.070 |
| | Choral Ensemble | -.032[b] | -.491 | .624 | -.032 | .957 | 1.045 |
| | Band | -.017[b] | -.269 | .788 | -.018 | .988 | 1.012 |
| | Orchestra | -.101[b] | -1.586 | .114 | -.103 | .992 | 1.008 |
| | Chamber Music | .000[b] | .001 | .999 | .000 | .993 | 1.007 |
| | Solo & Ensemble Festival | -.048[b] | -.731 | .466 | -.048 | .951 | 1.052 |
| | Honor Groups | -.011[b] | -.162 | .872 | -.011 | .952 | 1.050 |
| | Composing and Arranging | -.016[b] | -.221 | .825 | -.014 | .738 | 1.356 |
| | Improvisation | .011[b] | .154 | .878 | .010 | .864 | 1.158 |
| | Musical Theater | -.023[b] | -.340 | .734 | -.022 | .909 | 1.100 |
| | Music History | .032[b] | .493 | .623 | .032 | .955 | 1.047 |
| | Music Theory | -.024[b] | -.340 | .734 | -.022 | .833 | 1.201 |
| | Music Appreciation | .061[b] | .950 | .343 | .062 | .983 | 1.017 |

a. Predictors in the Model: (Constant), Participation in Class Piano

b. Predictors in the Model: (Constant), Participation in Class Piano, Participation in Music Technology

c. Dependent Variable: Relatedness Subscale

**Stepwise Multiple Regression of Out-of-School Music Participation and BPNMS**

A stepwise multiple regression analysis was used to determine the extent to which the 13 out-of-school music participation variables predicted the satisfaction of subjects' psychological needs, as measured by their BPNMS scores. Table 42 summarizes the regression model for the BPNMS scores, operationally used to define satisfaction of subjects' overall psychological needs for *Autonomy*, *Competence*, and *Relatedness*. In the final model, participation in band, a Garage Band, and ensemble directing significantly contributed to the prediction of subjects' BPNMS scores ($p = .020$), and was added to the stepwise multiple regression equation. None of the other out-of-school music participation variables made significant contributions ($p \geq .05$) to the satisfaction of subjects' psychological needs and were excluded from the multiple regression analysis.

**Table 42**
*Summary of the Regression Model for the BPNMS (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .264[a] | .070 | .066 | .682 | .070 | 17.619 | 1 | 235 | .000 | |
| 2 | .299[b] | .090 | .082 | .676 | .020 | 5.121 | 1 | 234 | .025 | |
| 3 | .332[c] | .110 | .099 | .670 | .021 | 5.452 | 1 | 233 | .020 | 1.811 |

a. Predictors: (Constant), Participation in Band
b. Predictors: (Constant), Participation in Band, Participation in a Garage Band
c. Predictors: (Constant), Participation in Band, Participation in a Garage Band, Ensemble Directing

In the first model, the amount of variance in the BPNMS scores explained by subjects' participation in band was 6.6%. Participation in band significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 6.6\%$; $p < .000$).

The variable, participation in a Garage Band was added to the stepwise multiple regression analysis. In the second model, 8.2% of the variance in the subjects' BPNMS scores was explained by the differences in subjects' participation in honor music groups and a Garage Band. Participation in band and a Garage Band significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 8.2\%$; $p = .025$).

The variable, ensemble directing was added to the stepwise multiple regression. In the third and final model, 9.9% of the variance in subjects' scores was explained by the differences in subjects' participation in honor music groups, a Garage Band, and ensemble directing. Participation in band, a Garage Band, and ensemble directing significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 9.9\%$; $p = .025$). The Durbin-Watson statistic of 1.811 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 42).

The prediction equation from the stepwise multiple regression is presented in Table 43. For every increase in band participation ($\beta = .083$), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 8.3%.

**Table 43**
*Prediction Equation for Stepwise Multiple Regression for the BPNMS*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 5.116 | .061 | | 83.408 | .000 |
| | Participation in Band | .083 | .020 | .264 | 4.197 | .000 |
| 2 | (Constant) | 5.090 | .062 | | 82.169 | .000 |
| | Participation in Band | .079 | .020 | .252 | 4.020 | .000 |
| | Participation in Garage Band | .160 | .071 | .142 | 2.263 | .025 |
| 3 | (Constant) | 5.118 | .063 | | 81.843 | .000 |
| | Participation in Band | .046 | .024 | .147 | 1.926 | .055 |
| | Participation in Garage Band | .175 | .070 | .155 | 2.495 | .013 |
| | Ensemble Directing | .090 | .039 | .178 | 2.335 | .020 |

Participation in band and in a Garage Band were both significant predictors of subjects' BPNMS scores. Participation in band ($t$ = 4.020) had nearly twice the effect on satisfying subjects' psychological needs for *Autonomy*, *Competence*, and *Relatedness* as did participation in a Garage Band ($t$ = 2.263). In the second model, for every increase in band participation ($\beta$ = .079), the degree to which subjects' psychological need for *Autonomy*, *Competence*, and *Relatedness* were satisfied increased by 7.9%, when Garage Band participation was held constant. Alternatively, when band participation was held constant, for every increase in Garage Band participation ($\beta$ = .160), the degree to which subjects' psychological need for *Autonomy*, *Competence,* and *Relatedness* were satisfied increased by 16%.

In the third and final model, participation in a Garage Band ($p$ = .013) and ensemble directing ($p$ = .020) significantly contributed to the satisfaction of subjects' need for *Autonomy*, *Competence*, and *Relatedness*. In this model, participation in band was not a significant predictor ($p$ = .055). Participation in a Garage Band ($t$ = 2.495) had a slightly greater effect on subjects' need for *Autonomy*, *Competence*, and *Relatedness* than did ensemble directing ($t$ = 2.335). In the final model, for every increase in Garage Band participation ($\beta$ = .175), the degree to which subjects' psychological need *Autonomy*, *Competence*, and *Relatedness* were satisfied increased by 17.5%, when ensemble directing was held constant. Alternatively, when Garage Band participation was held constant, for every increase in ensemble directing ($\beta$ = .090), the degree to which subjects' psychological need for *Autonomy*, *Competence*, and *Relatedness* were satisfied increased by 9%.

There was minimal overlap among the predictor variables. The Pearson-Product moment correlation coefficients for the predictor variables are presented in Table 44. There were very weak correlations between the participation in band and participation in a Garage Band and between participation in a Garage Band and ensemble directing. There was a moderately positive correlation between participation in band and ensemble directing. Collinearity statistics are presented in Table 45. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for this model.

**Table 44**
*Pearson-Product Moment Correlations between Participation in Band, Participation in a Garage Band, and Ensemble Directing*

| | Participation in Band | Participation in Garage Band |
|---|---|---|
| **Participation in Band** | 1.00 | |
| **Participation in Garage Band** | .087 | 1.00 |
| **Ensemble Directing** | .580** | -.026 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 45**
*Collinearity Statistics of Predictor Variables on BPNMS*

| | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| **Model** | | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 | (Constant) | | | | | |
| | Participation in Band | .264 | .264 | .264 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Participation in Band | .264 | .254 | .251 | .992 | 1.008 |
| | Participation in Garage Band | .164 | .146 | .141 | .992 | 1.008 |
| 3 | (Constant) | | | | | |
| | Participation in Band | .264 | .125 | .119 | .653 | 1.531 |
| | Participation in Garage Band | .164 | .161 | .154 | .983 | 1.017 |
| | Ensemble Directing | .259 | .151 | .144 | .658 | 1.521 |

The excluded variables are presented in Table 46. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The

Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 46**

*Multiple Regression Equation Excluded Variables*

| Model | | Model 1 Excluded Variables[b] Beta In | *t* | Sig. | Partial *r* | Collinearity Statistics Tol. | VIF |
|---|---|---|---|---|---|---|---|
| 1 | Choir | .096[a] | 1.437 | .152 | .094 | .881 | 1.135 |
| | Orchestra | -.021[a] | -.290 | .772 | -.019 | .768 | 1.302 |
| | Chamber Music | .030[a] | .398 | .691 | .026 | .722 | 1.384 |
| | Solo Performance | .085[a] | 1.245 | .214 | .081 | .853 | 1.172 |
| | Composing and Arranging | .100[a] | 1.392 | .165 | .091 | .766 | 1.305 |
| | Improvising | -.003[a] | -.041 | .967 | -.003 | .812 | 1.232 |
| | Ensemble directing | .160[a] | 2.085 | .038 | .135 | .664 | 1.507 |
| | Musical theater | .129[a] | 1.937 | .054 | .126 | .880 | 1.136 |
| | Private instruction | .081[a] | 1.155 | .249 | .075 | .812 | 1.232 |
| | Summer music camp | .133[a] | 1.983 | .049 | .129 | .870 | 1.150 |
| | *Garage Band* | .142[a] | 2.263 | .025 | .146 | .992 | 1.008 |
| | Recording Studio Work | .079[a] | 1.186 | .237 | .077 | .900 | 1.111 |
| | Professional Performer | .141[a] | 2.018 | .045 | .131 | .801 | 1.248 |
| 2 | Choir | .079[b] | 1.185 | .237 | .077 | .868 | 1.152 |
| | Orchestra | -.025[b] | -.355 | .723 | -.023 | .768 | 1.303 |
| | Chamber Music | .054[b] | .726 | .469 | .048 | .708 | 1.412 |
| | Composing and Arranging | .053[b] | .758 | .449 | .050 | .809 | 1.236 |
| | Improvising | .092[b] | 1.292 | .198 | .084 | .765 | 1.308 |
| | Ensemble directing | -.012[b] | -.174 | .862 | -.011 | .809 | 1.236 |
| | Musical theater | .178[b] | 2.335 | .020 | .151 | .658 | 1.521 |
| | Private instruction | .128[b] | 1.930 | .055 | .125 | .880 | 1.136 |
| | Summer music camp | .077[b] | 1.120 | .264 | .073 | .811 | 1.232 |
| | Music Camp | .122[b] | 1.827 | .069 | .119 | .865 | 1.157 |
| | Recording Studio Work | .081[b] | 1.234 | .218 | .081 | .900 | 1.111 |
| | Professional Musician | .101[b] | 1.372 | .171 | .090 | .719 | 1.391 |
| 3 | Choir | .073[c] | 1.108 | .269 | .073 | .867 | 1.153 |
| | Orchestra | -.038[c] | -.537 | .592 | -.035 | .763 | 1.310 |
| | Chamber Music | .030[c] | .399 | .690 | .026 | .693 | 1.442 |
| | Composing and Arranging | -.011[c] | -.147 | .883 | -.010 | .688 | 1.453 |
| | Improvisation | -.057[c] | -.559 | .577 | -.037 | .365 | 2.743 |
| | Musical Theater | -.094[c] | -1.245 | .214 | -.081 | .673 | 1.487 |
| | Private instruction | .082[c] | 1.154 | .250 | .076 | .759 | 1.317 |
| | Summer music camp | .053[c] | .756 | .450 | .050 | .790 | 1.266 |
| | Music Camp | .128[c] | 1.940 | .054 | .126 | .863 | 1.158 |
| | Recording Studio Work | .037[c] | .543 | .588 | .036 | .813 | 1.230 |
| | Professional Musician | .040[c] | .502 | .616 | .033 | .607 | 1.647 |

a. Predictors: (Constant), Participation in Band

b. Predictors: (Constant), Participation in Band, Participation in Garage Band

c. Predictors: (Constant), Participation in Band , Participation in Garage Band, Ensemble Directing

d. Dependant Variable: Composite Psychological Needs Scale

**Stepwise Multiple Regression of Out-of-School Music Participation and Autonomy**

A stepwise multiple regression analysis was used to determine the extent to which the 13 out-of-school music participation the satisfaction of subjects' need for *Autonom*y, as measured by their scores on *Autonomy* subscale of the BPNMS. Table 47 summarizes the regression model for the satisfaction of subjects' need for *Autonom*y, as measured by their scores on *Autonomy* subscale of the BPNMS. In the final model, participation in band and ensemble directing significantly contributed to the prediction of *Autonomy* scores ($p < .000$) and was added to the stepwise multiple regression equation. None of the other out-of-school music participation variables made a significant contribution to satisfying subjects' need for *Autonomy* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 47**
*Summary of the Regression Model for the Autonomy Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .288[a] | .083 | .079 | .887 | .083 | 21.323 | 1 | 235 | .000 | |
| 2 | .324[b] | .105 | .097 | .878 | .022 | 5.698 | 1 | 234 | .018 | 1.856 |

a. Predictors: (Constant), Participation in Band
b. Predictors: (Constant), Participation in Band, Ensemble Directing

In the first model, the amount of variance in the *Autonomy* scores explained by subjects' participation in band was 7.9%. Participation in band significantly predicted the

extent to which subjects' psychological need for *Autonomy* was satisfied ($s^2\%$ = 7.9%; $p < .000$).

The variable, participation in ensemble directing was added to the stepwise multiple regression analysis. In the second and final model, 9.7% of the variance in subjects' *Autonomy* scores was explained by the differences in subjects' participation in band and ensemble directing. Participation in band and ensemble directing significantly predicted the extent to which subjects' psychological need for *Autonomy* was satisfied ($s^2\%$ = 9.7; $p = .018$). The Durbin-Watson statistic of 1.856 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 47).

The prediction equation from the stepwise multiple regression is presented in Table 48. In the first model, for every increase in band participation ($\beta$ =.118), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 11.8%.

In the second and final model, participation in band ($p = .017$) and ensemble directing ($p = .018$) significantly contributed to the satisfaction of subjects' need for *Autonomy*. Participation in band ($t = 2.414$) had a slightly greater effect than participation in ensemble directing ($t = 2.387$) on subjects' need for *Autonomy*. In the final model, for every increase in band participation ($\beta$ = .075), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 7.5%, when ensemble directing was held constant. Alternatively, when band participation was held constant, for every increase in ensemble directing ($\beta$ = .120), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 12%.

There was minimal overlap among the predictor variables. There was a moderately positive correlation between the participation in band groups and ensemble directing ($r$ = .580; $p$ < .000). Collinearity statistics are presented in Table 49. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for this model.

**Table 48**
*Prediction Equation for Stepwise Multiple Regression for the Autonomy Subscale*

| | | Unstandardized Coefficients | | Standardized Coefficients | $t$ | Sig. |
|---|---|---|---|---|---|---|
| **Model** | | ***β*** | **Std. Error** | ***β*** | | |
| 1 | (Constant) | 4.505 | .080 | | 56.491 | .000 |
| | Participation in Band | .118 | .026 | .288 | 4.618 | .000 |
| 2 | (Constant) | 4.546 | .081 | | 56.257 | .000 |
| | Participation in Band | .075 | .031 | .183 | 2.414 | .017 |
| | Ensemble Directing | .120 | .050 | .181 | 2.387 | .018 |

**Table 49**
*Collinearity Statistics of Predictor Variables on the Autonomy Subscale*

| | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| **Model** | | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 | (Constant) | | | | | |
| | Participation in Band | .288 | .288 | .288 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Participation in Band | .288 | .156 | .149 | .664 | 1.507 |
| | Ensemble Directing | .288 | .154 | .148 | .664 | 1.507 |

The excluded variables are presented in Table 50. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 50**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | Choir | .081[a] | 1.212 | .227 | .079 | .881 | 1.135 |
| | Orchestra | -.059[a] | -.822 | .412 | -.054 | .768 | 1.302 |
| | Chamber Music | .027[a] | .373 | .710 | .024 | .722 | 1.384 |
| | Solo Performance | .068[a] | 1.002 | .317 | .065 | .853 | 1.172 |
| | Composing and Arranging | .118[a] | 1.660 | .098 | .108 | .766 | 1.305 |
| | Improvising | -.015[a] | -.222 | .824 | -.015 | .812 | 1.232 |
| | Ensemble directing | .181[a] | 2.387 | .018 | .154 | .664 | 1.507 |
| | Musical theater | .124[a] | 1.868 | .063 | .121 | .880 | 1.136 |
| | Private instruction | .012[a] | .175 | .862 | .011 | .812 | 1.232 |
| | Summer music camp | .116[a] | 1.739 | .083 | .113 | .870 | 1.150 |
| | Garage Band | .086[a] | 1.367 | .173 | .089 | .992 | 1.008 |
| | Recording Studio Work | .084[a] | 1.284 | .200 | .084 | .900 | 1.111 |
| | Professional Performer | .119[a] | 1.710 | .089 | .111 | .801 | 1.248 |
| 2 | Choir | .076[b] | 1.161 | .247 | .076 | .880 | 1.136 |
| | Orchestra | -.071[b] | -1.007 | .315 | -.066 | .764 | 1.308 |
| | Chamber Music | .000[b] | .005 | .996 | .000 | .705 | 1.419 |
| | Composing and Arranging | .013[b] | .181 | .856 | .012 | .747 | 1.339 |
| | Improvisation | -.005[b] | -.051 | .960 | -.003 | .375 | 2.665 |
| | Musical theater | -.097[b] | -1.296 | .196 | -.085 | .680 | 1.470 |
| | Private instruction | .076[b] | 1.074 | .284 | .070 | .761 | 1.313 |
| | Summer music camp | -.015[b] | -.211 | .833 | -.014 | .791 | 1.265 |
| | Garage Band | .124[b] | 1.871 | .063 | .122 | .868 | 1.152 |
| | Recording Studio Work | .101[b] | 1.618 | .107 | .105 | .983 | 1.017 |
| | Musical theater | .040[b] | .579 | .563 | .038 | .813 | 1.230 |
| | Professional Musician | .071[b] | .962 | .337 | .063 | .708 | 1.413 |

a. Predictors: (Constant), Participation in Band
b. Predictors: (Constant), Participation in Band , Ensemble Directing
d. Dependant variable: Autonomy Subscale

## Stepwise Multiple Regression of Out-of-School Music Participation and Competence

A stepwise multiple regression was used to determine the extent to which the 13 out-if-school music participation variables predicted the satisfaction of subjects' need for *Competence*, as measured by their scores on the *Competence* subscale of the BPNMS. Table 51 summarizes the regression model for the BPNMS *Competence* subscale,

operationally used to define satisfaction of subjects' psychological need for *Competence*. In the final model, participation in band, solo performance, and a Garage Band statistically contributed to the prediction of subjects' *Competence* scores ($p = .036$ and were added to the stepwise multiple regression equation. None of the other out-of-school music participation variables significantly contributed to satisfying subjects' need for *Competence* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 51**
*Summary of the Regression Model for the Competence Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .265[a] | .070 | .066 | .828 | .070 | 17.738 | 1 | 235 | .000 | |
| 2 | .313[b] | .098 | .090 | .817 | .028 | 7.212 | 1 | 234 | .008 | |
| 3 | .339[c] | .115 | .104 | .811 | .017 | 4.463 | 1 | 233 | .036 | 1.882 |

a. Predictors: (Constant), Participation in Band
b. Predictors: (Constant), Participation in Band, Solo Performance
c. Predictors: (Constant), Participation in Band, Solo Performance, Participation in Garage Band

In the first model, the amount of variance in the *Competence* scores explained by subjects' participation in band was 6.6%. Participation in band significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2\% = 6.6$; $p < .000$).

The variable, participation in solo performance was added to the stepwise multiple regression analysis. In the second model, 9% of the variance of the variance in subjects'

*Competence* scores was explained by the differences in subjects' participation in band and solo performance. Participation in band and solo performance significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2$% = 9%; $p$ = .008).

The variable, participation in a Garage Band was added to the stepwise multiple regression analysis. In the third and final model, 10.4 % of the variance in subjects' *Competence* scores was explained by the differences in subjects' participation in band, in solo performance. Participation in band, solo performance, and a Garage Band significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2$% = 10.4%; $p$ = .036). The Durbin-Watson statistic of 1.882 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 51).

The prediction equation from the stepwise regression is presented in Table 52. In the first model, for every increase in band participation ($\beta$ =.101), the degree to which subjects' psychological need for *Competence* was satisfied increased by 10.1%.

Participation in band ($p$ = .004) and solo performance ($p$ = .008) significantly contributed to the satisfaction of subjects' need for *Competence*. In the second model, participation in band ($t$ = 2.912) had a slightly greater effect than participation in solo performance ($t$ = 2.686) on subjects' need for *Competence*. For every increase in band participation ($\beta$ = .074), the degree to which subjects' psychological need for *Competence* was satisfied increased by 7.4%, when participation in solo performance was held constant. Alternatively, when band participation was held constant, for every

increase in participation in solo performance ($\beta$ = .091), the degree to which subjects' psychological need for autonomy was satisfied increased by 9.1%.

In the third and final model, participation in band ($p$ = .004), solo performance ($p$ = .032), and in a Garage Band ($p$ = .036) significantly contributed to the satisfaction of subjects' need for *Competence*. In the final model, participation in band ($t$ = 2.912) had the most effect on subjects' need for *Competence*, while participation in solo performance ($t$ = 2.153) and in a Garage Band ($t$ = 2.113) had a similar impact on subjects' need for *Competence*. For every increase in band participation ($\beta$ = .075), the degree to which subjects' psychological need for *Competence* was satisfied increased by 7.5%, when participation in solo performance and a Garage Band were held constant. When participation in band and in a Garage Band were held constant, for every increase in participation in solo performance ($\beta$ = .075), the degree to which subjects' psychological need for *Competence* was satisfied increased by 9.1%. When participation in band and solo performance were held constant, for every increase in participation in a Garage Band ($\beta$ = .184), the degree to which subjects' psychological need for *Competence* was satisfied increased by 18.4%.

**Table 52**
*Prediction Equation for Stepwise Multiple Regression for the Competence Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 4.795 | .074 | | 64.420 | .000 |
| | Participation in Band | .101 | .024 | .265 | 4.212 | .000 |
| 2 | (Constant) | 4.756 | .075 | | 63.534 | .000 |
| | Participation in Band | .074 | .026 | .196 | 2.912 | .004 |
| | Solo Performance | .091 | .034 | .181 | 2.686 | .008 |
| 3 | (Constant) | 4.733 | .075 | | 62.977 | .000 |
| | Participation in Band | .075 | .025 | .197 | 2.947 | .004 |
| | Solo Performance | .075 | .035 | .148 | 2.153 | .032 |
| | Participation in Garage Band | .184 | .087 | .134 | 2.113 | .036 |

There was minimal overlap among the predictor variables. Pearson-Product moment correlation coefficients for the predictor variables are presented in Table 53. There were moderately low positive correlations between the participation in band and solo performance, and between participation in solo performance and in a Garage Band. There was very week correlation between participation in band and in a Garage Band. Collinearity statistics are presented in Table 54. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for this model.

**Table 53**
*Pearson-Product Moment Correlation among Participation for Performance, Solo Performance, and Participation in a Garage Band*

| | | Participation in Band | Solo Performance |
|---|---|---|---|
| **Participation in Band** | | 1.000 | |
| **Solo Performance** | P. Correlation | .383** | 1.000 |
| **Participation in Garage Band** | P. Correlation | .087 | .243 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 54**
*Collinearity Statistics of Predictor Variables on the Competence Subscale*

| | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| **Model** | | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 | (Constant) | | | | | |
| | Participation in Band | .265 | .265 | .265 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Participation in Band | .265 | .187 | .181 | .853 | 1.172 |
| | Solo Performance | .256 | .173 | .167 | .853 | 1.172 |
| 3 | (Constant) | | | | | |
| | Participation in Band | .265 | .190 | .182 | .853 | 1.172 |
| | Solo Performance | .256 | .140 | .133 | .809 | 1.236 |
| | Participation in Garage Band | .187 | .137 | .130 | .941 | 1.063 |

The excluded variables are presented in Table 55. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 55**

*Multiple Regression Equation Excluded Variables*

| Model | | Model 1 Excluded Variables[b] Beta In | t | Sig. | Partial *r* | Collinearity Statistics Tol. | VIF |
|---|---|---|---|---|---|---|---|
| 1 | Choir | .105[a] | 1.576 | .116 | .102 | .881 | 1.135 |
| | Orchestra | .086[a] | 1.202 | .230 | .078 | .768 | 1.302 |
| | Chamber Music | .013[a] | .171 | .864 | .011 | .722 | 1.384 |
| | Solo Performance | .181[a] | 2.686 | .008 | .173 | .853 | 1.172 |
| | Composing and Arranging | .049[a] | .679 | .498 | .044 | .766 | 1.305 |
| | Improvising | .041[a] | .580 | .562 | .038 | .812 | 1.232 |
| | Ensemble directing | .084[a] | 1.084 | .279 | .071 | .664 | 1.507 |
| | Musical theater | .121[a] | 1.818 | .070 | .118 | .880 | 1.136 |
| | Private instruction | .133[a] | 1.915 | .057 | .124 | .812 | 1.232 |
| | Summer music camp | .098[a] | 1.457 | .146 | .095 | .870 | 1.150 |
| | Garage Band | .165[a] | 2.653 | .009 | .171 | .992 | 1.008 |
| | Recording Studio Work | .049[a] | .732 | .465 | .048 | .900 | 1.111 |
| | Professional Performer | .105[a] | 1.499 | .135 | .098 | .801 | 1.248 |
| 2 | Choir | .055[b] | .790 | .430 | .052 | .795 | 1.258 |
| | Orchestra | .062[b] | .861 | .390 | .056 | .754 | 1.326 |
| | Chamber Music | .011[b] | .153 | .879 | .010 | .722 | 1.384 |
| | Composing and Arranging | -.025[b] | -.326 | .744 | -.021 | .662 | 1.511 |
| | Improvising | -.048[b] | -.627 | .531 | -.041 | .661 | 1.512 |
| | Ensemble Directing | .013[b] | .161 | .873 | .011 | .581 | 1.721 |
| | Musical theater | .060[b] | .825 | .410 | .054 | .739 | 1.353 |
| | Private instruction | .082[b] | 1.127 | .261 | .074 | .728 | 1.374 |
| | Summer music camp | .074[b] | 1.107 | .269 | .072 | .853 | 1.173 |
| | Garage Band | .134[b] | 2.113 | .036 | .137 | .941 | 1.063 |
| | Recording Studio Work | .012[b] | .178 | .859 | .012 | .860 | 1.163 |
| | Professional Performer | .024[b] | .307 | .759 | .020 | .630 | 1.588 |
| 3 | Choir | .048[c] | .687 | .493 | .045 | .793 | 1.262 |
| | Orchestra | .062[c] | .874 | .383 | .057 | .754 | 1.326 |
| | Chamber Music | .034[c] | .466 | .641 | .031 | .707 | 1.414 |
| | Composing and Arranging | -.019[c] | -.249 | .804 | -.016 | .661 | 1.513 |
| | Improvising | -.041[c] | -.537 | .592 | -.035 | .660 | 1.515 |
| | Ensemble Directing | .048[c] | .578 | .564 | .038 | .560 | 1.787 |
| | Musical theater | .074[c] | 1.027 | .305 | .067 | .733 | 1.364 |
| | Private instruction | .091[c] | 1.259 | .209 | .082 | .726 | 1.378 |
| | Summer music camp | .068[c] | 1.017 | .310 | .067 | .851 | 1.175 |
| | Garage Band | .022[c] | .323 | .747 | .021 | .856 | 1.168 |
| | Recording Studio Work | -.018[c] | -.223 | .824 | -.015 | .591 | 1.693 |
| | Professional Musician | .105[a] | 1.576 | .116 | .102 | .881 | 1.135 |

a. Predictors: (Constant), Participation in Band

b. Predictors: (Constant), Participation in Band, Solo Performance

c. Predictors: (Constant), Participation in Band, Solo Performance, Participation in Garage Band

d. Dependant Variable: Competence Subscale

**Stepwise Multiple Regression of Out-of-School Music Participation and Relatedness**

A stepwise multiple regression analysis was used to determine the extent to which the 13 out-of-school music participation variables predicted the satisfaction of subjects' needs for *Relatedness*, as measured by their scores on the BPNMS *Relatedness* subscale. Table summarizes the regression model for the BPNMS on the *Relatedness* subscale, operationally used to define satisfaction of subjects' psychological need for *Relatedness*. Participation as a professional performance significantly contributed to the prediction of subjects' *Relatedness* scores ($p = .021$), and was added to the stepwise multiple regression equation. None of the other out-of-school music participation variables made significant contributions to satisfying subjects' need for *Relatedness* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 56**
*Summary of the Regression Model for the Relatedness Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .150[a] | .023 | .018 | .766 | .023 | 5.436 | 1 | 235 | .021 | 1.960 |

a. Predictors: (Constant), Professional Performer

The amount of variance in *Relatedness* scores explained by subjects' participation in band was 1.8%. Participation as a professional performer significantly predicted 1.8% of the extent to which subjects' psychological need for relatedness was satisfied ($s^2\%$ =

1.8%; $p < .021$). The Durbin-Watson statistic of 1.960 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (See Table 56).

The prediction equation from the stepwise multiple regression is presented in Table 57. For every increase in participation as a professional performer ($\beta = .103$), the degree to which subjects' psychological need for *Relatedness* was satisfied increased by 10.3%.

**Table 57**
*Prediction Equation for Stepwise Multiple Regression for the Relatedness Subscale*

| | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|
| **Model** | ***β*** | **Std. Error** | ***β*** | | |
| 1(Constant) | 5.938 | .052 | | 114.176 | .000 |
| Professional Performer | .103 | .044 | .150 | 2.331 | .021 |

**Table 58**
*Collinearity Statistics of Predictor Variables of the Relatedness Subscale*

| | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| **Model** | | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 | (Constant) | | | | | |
| | Professional Performer | .150 | .150 | .150 | .150 | 1.000 |

The excluded variables are presented in Table 59. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the

variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 59**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | Choir | .075[a] | 1.158 | .248 | .075 | .989 | 1.011 |
| | Band | .055[a] | .759 | .449 | .050 | .801 | 1.248 |
| | Orchestra | -.023[a] | -.348 | .728 | -.023 | .962 | 1.039 |
| | Chamber Music | .052[a] | .795 | .427 | .052 | .958 | 1.044 |
| | Solo Performance | -.081[a] | -1.043 | .298 | -.068 | .694 | 1.441 |
| | Composing and Arranging | .043[a] | .568 | .571 | .037 | .715 | 1.398 |
| | Improvising | -.074[a] | -.968 | .334 | -.063 | .711 | 1.407 |
| | Ensemble directing | .095[a] | 1.266 | .207 | .082 | .742 | 1.347 |
| | Musical theater | .063[a] | .906 | .366 | .059 | .874 | 1.144 |
| | Private instruction | .068[a] | 1.017 | .310 | .066 | .922 | 1.084 |
| | Summer music camp | .112[a] | 1.694 | .092 | .110 | .947 | 1.056 |
| | Garage Band | .081[a] | 1.190 | .235 | .078 | .895 | 1.118 |
| | Recording Studio Work | .027[a] | .374 | .709 | .024 | .801 | 1.248 |

a. Predictors: (Constant), Professional Performer
b. Dependant variable: Relatedness Subscale

## Stepwise Multiple Regression of Barriers to Music Participation and BPNMS

A stepwise multiple regression analysis was used to determine the extent to which the 26 barriers to music participation variables predicted the satisfaction of subjects' psychological needs, as measured by their BPNMS scores. Table 60 summarizes the regression model for subjects' BPNMS scores, operationally used to define satisfaction of subjects' overall psychological needs for *Autonomy*, *Competence*, and *Relatedness*. In the

final model, music difficulty (for individual), music too easy, and scheduling conflicts significantly contributed subjects' BPNMS scores ($p$ = .026), and were added to the stepwise multiple regression equation. None of the other barriers to music participation variables made significant contributions ($p \geq .05$) to the satisfaction of subjects' psychological needs, and were excluded from the multiple regression analysis.

**Table 60**
*Summary of the Regression Model for the BPNMS (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .447[a] | .200 | .197 | .632 | .200 | 58.763 | 1 | 235 | .000 | |
| 2 | .465[b] | .217 | .210 | .627 | .017 | 4.936 | 1 | 234 | .027 | |
| 3 | .483[c] | .233 | .223 | .622 | .016 | 5.005 | 1 | 233 | .026 | 2.041 |

a. Predictors: (Constant), Music Difficulty (for individual)
b. Predictors: (Constant), Music Difficulty (for individual), Music Too Easy
c. Predictors: (Constant), Music Difficulty (for individual), Music Too Easy, Scheduling Conflicts

In the first model, the amount of variance in the BPNMS scores explained by subjects' perception that music difficulty (for individual) was 19.7%. Music difficulty (for individual) significantly predicted extent to which subjects' psychological need for *Autonomy*, *Competence*, and *Relatedness* were satisfied ($s^2$% = 19.7%; $p$ < .000).

The variable, music too easy was added to the stepwise multiple regression. In the second model, 21% of the variance in scores was explained by differences in subjects' ratings of the variables music difficulty (for individual) and music too easy. The variables

music difficulty (for individual) and music too easy significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 21.7$; $p = .027$).

The variable, scheduling conflicts was added to the stepwise regression. In the third and final step, 22.3% of the variance in scores was explained by differences in subjects' ratings of the variables music difficulty (for individual), music too easy, and scheduling conflicts. The variables music difficulty (for individual), music too easy, and scheduling conflicts significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 22.3\%$; $p = .026$). Durbin-Watson statistic of 2.041 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (See Table 60).

The prediction equation from the stepwise multiple regression is presented in Table 61. In the first model, for every increase subjects' music difficulty (for individual) rating ($\beta = -.373$), the degree to which subjects' psychological need for *Autonomy, Competence, and Relatedness* were satisfied decreased by 37.3%.

In the second model, music difficulty (for individual; $p < .000$) and music too easy ($p < .000$) significantly contributed to the satisfaction of subjects' need for *Autonomy, Competence, and Relatedness*. Music difficulty (for individual*; t* = -7.936) had a much greater effect than music too easy ($t = 2.222$) on subjects' need for *Autonomy, Competence, and Relatedness*. For every increase in music difficulty (for individual; $\beta = -.385$), the degree to which subjects' psychological need for *Autonomy, Competence, and Relatedness* were satisfied decreased by 38.5%, when music too easy was held constant.

Alternatively, when music difficulty (for individual) was held constant, for every increase in music too easy ($\beta$ = .100), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 10%.

In the third and final model, music difficulty (for individual*;* $p < .000$), music too easy ($p$ = .007), and scheduling conflicts ($p$ = .026) significantly contributed to the satisfaction of subjects' need for *Autonomy, Competence,* and *Relatedness*. Music difficulty (for individual*;* $t$ = -7.598) had a much greater effect on subjects' psychological need for *autonomy, competence,* and *relatedness* than music too easy or scheduling conflicts. Music too easy ($t$ = 2.739) had more than twice the effect than scheduling conflicts ($t$ = -2.237). In the final model, for every increase in music difficulty (for individual; $\beta$ = -.370), the degree to which subjects' psychological need for *autonomy, competence, and relatedness* were satisfied decreased by 37%, when music too easy and a scheduling conflicts were held constant. When music difficulty (for individual) and scheduling conflicts were held constant, for every increase in music too easy ($\beta$ = .126), the degree to which subjects' psychological need for *autonomy, competence, and relatedness* were satisfied increased by 12.6%. When music difficulty and scheduling conflicts were held constant, for every increase in music too easy ($\beta$ = -.104), the degree to which subjects' psychological need for *autonomy, competence, and relatedness* were satisfied decreased by 10.4%.

**Table 61**
*Prediction Equation for Stepwise multiple regression for the BPNMS*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 5.938 | .093 | | 63.552 | .000 |
| | Music Difficulty (for individual) | -.373 | .049 | -.447 | -7.666 | .000 |
| 2 | (Constant) | 5.789 | .114 | | 50.619 | .000 |
| | Music Difficulty (for individual) | -.385 | .049 | -.462 | -7.936 | .000 |
| | Music Too Easy | .100 | .045 | .129 | 2.222 | .027 |
| 3 | (Constant) | 5.946 | .134 | | 44.538 | .000 |
| | Music Difficulty (for individual) | -.370 | .049 | -.444 | -7.598 | .000 |
| | Music Too Easy | .126 | .046 | .164 | 2.739 | .007 |
| | Scheduling Conflicts | -.104 | .046 | -.135 | -2.237 | .026 |

There was minimal overlap among the predictor variables. Pearson-Product moment correlation coefficients for the predictor variables are presented in Table 62. There were very low positive correlations among music difficulty (for individual), music too easy, and scheduling conflicts. Collinearity statistics are presented in Table 63. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for these models.

**Table 62**
*Pearson-Product Moment Correlation among Music Difficulty (for individual), Music Difficulty (for individual), and Scheduling Conflicts*

| | Music Difficulty (for individual) | Music Too Easy |
|---|---|---|
| **Music Difficulty (for individual)** | 1.00 | |
| **Music Too Easy** | .117 | 1.00 |
| **Scheduling Conflicts** | .169** | .271** |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 63**
*Collinearity Statistics of Predictor Variables on the BPNMS*

| | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| **Model** | | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 | (Constant) | | | | | |
| | Music Difficulty (for individual) | -.447 | -.447 | -.447 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Music Difficulty (for individual) | -.447 | -.461 | -.459 | .986 | 1.014 |
| | Music Too Easy | .076 | .144 | .129 | .986 | 1.014 |
| 3 | (Constant) | | | | | |
| | Music Difficulty (for individual) | -.447 | -.446 | -.436 | .966 | 1.035 |
| | Music Too Easy | .076 | .177 | .157 | .922 | 1.085 |
| | Scheduling Conflicts | -.166 | -.145 | -.128 | .908 | 1.102 |

The excluded variables are presented in Table 64. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 64**

*Multiple Regression Equation Excluded Variables*

**Model 1 Excluded Variables[b]**

| Model | | Beta In | *t* | Sig. | Partial *r* | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | VIF |
| 1 | Participation fee | -.082[a] | -1.389 | .166 | -.090 | .977 | 1.023 |
| | Personal Finances | -.087[a] | -1.478 | .141 | -.096 | .988 | 1.012 |
| | Scheduling conflicts | -.092[a] | -1.567 | .119 | -.102 | .971 | 1.030 |
| | Distance to travel | -.062[a] | -1.034 | .302 | -.067 | .955 | 1.048 |
| | Transportation problems | -.032[a] | -.552 | .581 | -.036 | .996 | 1.004 |
| | Professional Obligations | -.050[a] | -.864 | .388 | -.056 | .999 | 1.001 |
| | Personal Health | -.039[a] | -.658 | .511 | -.043 | .996 | 1.004 |
| | Family Obligations | .076[a] | 1.304 | .193 | .085 | .996 | 1.004 |
| | Childcare | .081[a] | 1.384 | .168 | .090 | .996 | 1.004 |
| | Late Rehearsals | -.007[a] | -.115 | .908 | -.008 | .973 | 1.028 |
| | Long Rehearsals | -.032[a] | -.533 | .595 | -.035 | .972 | 1.029 |
| | Too Many Rehearsals | .034[a] | .573 | .567 | .037 | .973 | 1.028 |
| | Loss of Enjoyment | -.040[a] | -.645 | .519 | -.042 | .909 | 1.100 |
| | Diminishing Skill Level | -.052[a] | -.803 | .423 | -.052 | .817 | 1.224 |
| | Director's personality | .072[a] | 1.149 | .252 | .075 | .861 | 1.162 |
| | Director's competence | .128[a] | 2.079 | .039 | .135 | .889 | 1.125 |
| | New director | .024[a] | .399 | .690 | .026 | .978 | 1.023 |
| | No/little input into music selection | .031[a] | .506 | .613 | .033 | .899 | 1.113 |
| | Music difficulty (for ensemble) | .122[a] | 1.462 | .145 | .095 | .486 | 2.058 |
| | Music is too easy | .129[a] | 2.222 | .027 | .144 | .986 | 1.014 |
| | Music is too often uninteresting or unexciting | .087[a] | 1.437 | .152 | .094 | .918 | 1.089 |
| | Decrease in quality of the ensemble | .109[a] | 1.825 | .069 | .118 | .940 | 1.064 |
| | Unsupportive environment | .114[a] | 1.853 | .065 | .120 | .892 | 1.121 |
| | Too critical of environment | .122[a] | 1.943 | .053 | .126 | .850 | 1.176 |
| | Unbalanced instrumentation/seating | .072[a] | 1.177 | .240 | .077 | .915 | 1.093 |

(Continued)

**Table 64 (continued)**

*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 2 | Participation fee | -.090[b] | -1.546 | .123 | -.101 | .974 | 1.027 |
| | Personal Finances | -.096[b] | -1.653 | .100 | -.108 | .983 | 1.017 |
| | Scheduling conflicts | -.135[b] | -2.237 | .026 | -.145 | .908 | 1.102 |
| | Distance to travel | -.091[b] | -1.506 | .134 | -.098 | .919 | 1.088 |
| | Transportation problems | -.055[b] | -.931 | .353 | -.061 | .970 | 1.031 |
| | Professional Obligations | -.065[b] | -1.123 | .263 | -.073 | .987 | 1.013 |
| | Personal Health | -.046[b] | -.797 | .426 | -.052 | .993 | 1.007 |
| | Family Obligations | .053[b] | .890 | .374 | .058 | .957 | 1.045 |
| | Childcare | .074[b] | 1.277 | .203 | .083 | .993 | 1.007 |
| | Late Rehearsals | -.010[b] | -.173 | .863 | -.011 | .972 | 1.029 |
| | Long Rehearsals | -.046[b] | -.780 | .436 | -.051 | .960 | 1.041 |
| | Too Many Rehearsals | .009[b] | .150 | .881 | .010 | .936 | 1.068 |
| | Loss of Enjoyment | -.097[b] | -1.509 | .133 | -.098 | .802 | 1.247 |
| | Diminishing Skill Level | -.084[b] | -1.282 | .201 | -.084 | .784 | 1.275 |
| | Director's personality | .026[b] | .397 | .692 | .026 | .753 | 1.328 |
| | Director's competence | .084[b] | 1.241 | .216 | .081 | .721 | 1.387 |
| | New director | -.009[b] | -.144 | .885 | -.009 | .919 | 1.088 |
| | No/little input into music selection | -.022[b] | -.336 | .737 | -.022 | .775 | 1.290 |
| | Music difficulty (for ensemble) | .060[b] | .670 | .504 | .044 | .414 | 2.413 |
| | Music is too often uninteresting or unexciting | -.026[b] | -.294 | .769 | -.019 | .416 | 2.406 |
| | Decrease in quality of the ensemble | .046[b] | .619 | .537 | .041 | .600 | 1.668 |
| | Unsupportive environment | .073[b] | 1.103 | .271 | .072 | .765 | 1.307 |
| | Too critical of environment | .083[b] | 1.229 | .220 | .080 | .739 | 1.353 |
| | Unbalanced instrumentation/seating | .020[b] | .300 | .764 | .020 | .761 | 1.314 |

(Continued)

**Table 64 (continued)**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 3 | Participation fee | -.065[c] | -1.094 | .275 | -.072 | .927 | 1.078 |
| | Personal Finances | -.076[c] | -1.296 | .196 | -.085 | .954 | 1.048 |
| | Distance to travel | -.043[c] | -.651 | .516 | -.043 | .763 | 1.310 |
| | Transportation problems | -.025[c] | -.423 | .672 | -.028 | .916 | 1.091 |
| | Professional Obligations | -.013[c] | -.210 | .834 | -.014 | .813 | 1.231 |
| | Personal Health | -.037[c] | -.639 | .523 | -.042 | .987 | 1.013 |
| | Family Obligations | .119[c] | 1.886 | .061 | .123 | .822 | 1.217 |
| | Childcare | .095[c] | 1.644 | .101 | .107 | .971 | 1.030 |
| | Late Rehearsals | .024[c] | .391 | .696 | .026 | .912 | 1.096 |
| | Long Rehearsals | -.014[c] | -.232 | .817 | -.015 | .900 | 1.111 |
| | Too Many Rehearsals | .068[c] | 1.069 | .286 | .070 | .804 | 1.243 |
| | Loss of Enjoyment | -.082[c] | -1.279 | .202 | -.084 | .792 | 1.263 |
| | Diminishing Skill Level | -.079[c] | -1.221 | .223 | -.080 | .783 | 1.277 |
| | Director's personality | .039[c] | .584 | .560 | .038 | .748 | 1.337 |
| | Director's competence | .097[c] | 1.439 | .151 | .094 | .716 | 1.396 |
| | New director | -.002[c] | -.032 | .975 | -.002 | .917 | 1.091 |
| | No/little input into music selection | -.012[c] | -.181 | .857 | -.012 | .771 | 1.297 |
| | Music difficulty (for ensemble) | .062[c] | .691 | .490 | .045 | .414 | 2.413 |
| | Music is too often uninteresting or unexciting | -.006[c] | -.062 | .951 | -.004 | .411 | 2.433 |
| | Decrease in quality of the ensemble | .052[c] | .694 | .488 | .046 | .599 | 1.669 |
| | Unsupportive environment | .066[c] | 1.009 | .314 | .066 | .763 | 1.310 |
| | Too critical of environment | .080[c] | 1.196 | .233 | .078 | .739 | 1.353 |
| | Unbalanced instrumentation/seating | .030[c] | .457 | .648 | .030 | .757 | 1.320 |

a. Predictors: (Constant), Music Difficulty (for individual)
b. Predictors: (Constant), Music Difficulty (for individual), Music Too Easy
c. Predictors: (Constant), Music Difficulty (for individual), Music Too Easy, Scheduling Conflicts
d. Dependant Variable: Psychological Needs Composite Scale

## Stepwise Multiple Regression of Barriers to Music Participation and Autonomy

A stepwise multiple regression analysis was used to determine the extent to which the 26 barriers to music participation variables predicted the satisfaction of subjects' need for *Autonom*y, as measured by their scores on *Autonomy* subscale of the BPNMS. Table 65

summarizes the regression model for the BPNMS *Autonomy* scores, operationally used to define satisfaction of subjects' psychological need for *Autonomy*. Music difficulty (for individual) significantly contributed to the prediction of subjects' *Autonomy* scores ($p <$ .000), and was added to the stepwise multiple regression equation. None of the other barriers music participation variables made significant contributions to satisfying subjects' need for *Autonomy* ($p \geq .05$) and were excluded from the multiple regression analysis.

**Table 65**
*Summary of the Regression Model for the Autonomy Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .392[a] | .154 | .150 | .852 | .154 | 42.762 | 1 | 235 | .000 | 2.038 |

a. Predictors: (Constant), Music Difficulty (for individual)

The amount of variance in BPNMS *Autonomy* subscale scores explained by subjects' of the variable music difficulty (for individual) ratings was 15%. Music difficulty (for individual) significantly predicted the extent to which subjects' psychological need for *Autonomy* was satisfied($s^2$% = 15%; $p <$ .000). The Durbin-Watson statistic of 2.038 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 65).

The prediction equation from the stepwise multiple regression is presented in Table 66. In this model, for every increase subjects' music difficulty (for individual) rating ($\beta$ = -.428), the degree to which subjects' psychological need for *Autonomy* was satisfied decreased by 37.3%. Collinearity statistics are presented in Table 67. The Tolerance and VIF coefficients for models indicate collinearity is not a concern.

**Table 66**
*Prediction Equation for Stepwise multiple regression for the Autonomy Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 5.499 | .126 | | 43.700 | .000 |
| | Music Difficulty (for individual) | -.428 | .065 | -.392 | -6.539 | .000 |

**Table 67**
*Collinearity Statistics of Predictor Variables on the Autonomy Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Participation in Honor Groups | -.392 | -.392 | -.392 | 1.000 | 1.000 |

The excluded variables are presented in Table 68. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the

variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 68**

*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | Participation fee | -.053[a] | -.876 | .382 | -.057 | .977 | 1.023 |
| | Personal Finances | -.076[a] | -1.256 | .210 | -.082 | .988 | 1.012 |
| | Scheduling conflicts | -.100[a] | -1.644 | .102 | -.107 | .971 | 1.030 |
| | Distance to travel | -.055[a] | -.895 | .372 | -.058 | .955 | 1.048 |
| | Transportation problems | .017[a] | .283 | .778 | .018 | .996 | 1.004 |
| | Professional Obligations | -.049[a] | -.812 | .418 | -.053 | .999 | 1.001 |
| | Personal Health | .006[a] | .107 | .915 | .007 | .996 | 1.004 |
| | Family Obligations | .012[a] | .196 | .844 | .013 | .996 | 1.004 |
| | Childcare | .077[a] | 1.284 | .201 | .084 | .996 | 1.004 |
| | Late Rehearsals | -.005[a] | -.079 | .937 | -.005 | .973 | 1.028 |
| | Long Rehearsals | -.004[a] | -.070 | .944 | -.005 | .972 | 1.029 |
| | Too Many Rehearsals | .075[a] | 1.235 | .218 | .080 | .973 | 1.028 |
| | Loss of Enjoyment | -.062[a] | -.987 | .325 | -.064 | .909 | 1.100 |
| | Diminishing Skill Level | -.034[a] | -.514 | .608 | -.034 | .817 | 1.224 |
| | Director's personality | .019[a] | .289 | .773 | .019 | .861 | 1.162 |
| | Director's competence | .098[a] | 1.551 | .122 | .101 | .889 | 1.125 |
| | New director | -.043[a] | -.705 | .482 | -.046 | .978 | 1.023 |
| | No/little input into music selection | .049[a] | .780 | .436 | .051 | .899 | 1.113 |
| | Music difficulty (for ensemble) | .138[a] | 1.612 | .108 | .105 | .486 | 2.058 |
| | Music is too easy | .112[a] | 1.865 | .063 | .121 | .986 | 1.014 |
| | Music is too often uninteresting or unexciting | .091[a] | 1.451 | .148 | .094 | .918 | 1.089 |
| | Decrease in quality of the ensemble | .077[a] | 1.248 | .213 | .081 | .940 | 1.064 |
| | Unsupportive environment | .047[a] | .744 | .458 | .049 | .892 | 1.121 |
| | Too critical of environment | .046[a] | .700 | .485 | .046 | .850 | 1.176 |
| | Unbalanced instrumentation/seating | .034[a] | .538 | .591 | .035 | .915 | 1.093 |

a. Predictors: (Constant), Music Difficulty (for individual)

b. Dependant Variable: Autonomy Subscale

**Stepwise Multiple Regression of Barriers to Music Participation and Competence**

A stepwise multiple regression was used to determine the extent to which the 26 barriers music participation variables predicted the satisfaction of subjects' need for *Competence*, as measured by their scores on the *Competence* subscale of the BPNMS. Table 69 summarizes the regression model for the BPNMS scores on *Competence* subscale, operationally used to define satisfaction of subjects' psychological need for *Competence*. In the final model, music difficulty (for individual) and music too easy significantly contributed to the prediction of subjects' *Competence* scores ($p < .000$), and was added to the stepwise multiple regression equation. None of the other barriers to music participation variables significantly contributed to satisfying subjects' need for *Competence* ($p \geq .05$), and were excluded from the multiple regression analysis.

In the first model, the amount of variance in *Competence* scores explained by subjects' ratings of the variable music difficulty (for individual) was 16.8%. Music difficulty (for individual) significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2\% = 16.8\%$; $p < .000$).

The variable, music too easy was added to the stepwise multiple regression. In the second and final model, 23.1% of the variance in scores was explained by the differences in subjects' ratings of the variables music difficulty (for individual) and music too easy. Music difficulty (for individual) and music too easy significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2\% = 23.1\%$; $p < .000$). The Durbin-Watson statistic of 1.827 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 69).

**Table 69**
*Summary of the Regression Model for the Competence Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .414[a] | .172 | .168 | .781 | .172 | 48.680 | 1 | 235 | .000 | |
| 2 | .487[b] | .237 | .231 | .751 | .065 | 20.068 | 1 | 234 | .000 | 1.827 |

a. Predictors: (Constant), Music Difficulty (for individual)
b. Predictors: (Constant), Music Difficulty (for individual), Music Too Easy

The prediction equation from the stepwise multiple regression is presented in Table 70. In the first model, for every increase subjects' music difficulty rating ($\beta$ = -.419), the degree to which subjects' psychological need for *Competence* was satisfied decreased by 41.9%.

In the second and final model, music difficulty (for individual; $p < .000$) and music too easy ($p < .000$) significantly contributed to the satisfaction of subjects' need for *Competence*. Music difficulty (for individual*; t* = -7.927) had a much greater effect than music too easy ($t$ = 4.480) on subjects' need for *Competence*. In the final model, for every increase in music difficulty (for individual*;* $\beta$ = -.449), the degree to which subjects' psychological need for *Competence* was satisfied decreased by 44.9%, when music too easy was held constant. Alternatively, when music difficulty (for individual) was held constant, for every increase in music too easy ($\beta$ = .241), the degree to which subjects' psychological need for *Competence* was satisfied increased by 24.1%.

**Table 70**
*Prediction Equation for Stepwise Multiple Regression for the Competence Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 5.735 | .115 | | 49.698 | .000 |
| | Music Difficulty (for individual) | -.419 | .060 | -.414 | -6.977 | .000 |
| 2 | (Constant) | 5.375 | .137 | | 39.243 | .000 |
| | Music Difficulty (for individual) | -.449 | .058 | -.444 | -7.727 | .000 |
| | Music Too Easy | .241 | .054 | .258 | 4.480 | .000 |

**There was minimal overlap among the predictor variables. There was a very low positive correlation among music difficulty (for individual) and music too easy (*r* = .117; *p* = .073). Collinearity statistics are presented in**
Table 71. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for these models.

**Table 71**
*Collinearity Statistics of Predictor Variables for the Competence Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Music Difficulty (for individual) | -.414 | -.414 | -.414 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Music Difficulty (for individual) | -.414 | -.451 | -.441 | .986 | 1.014 |
| | Music Too Easy | .206 | .281 | .256 | .986 | 1.014 |

The excluded variables are presented in Table 72. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 72**

*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| | | -.029[a] | -.483 | .629 | -.032 | .977 | 1.023 |
| 1 | Participation fee | | | | | | |
| | Personal Finances | -.034[a] | -.571 | .568 | -.037 | .988 | 1.012 |
| | Scheduling conflicts | -.014[a] | -.226 | .821 | -.015 | .971 | 1.030 |
| | Distance to travel | .004[a] | .058 | .954 | .004 | .955 | 1.048 |
| | Transportation problems | -.009[a] | -.155 | .877 | -.010 | .996 | 1.004 |
| | Professional Obligations | .010[a] | .170 | .865 | .011 | .999 | 1.001 |
| | Personal Health | -.012[a] | -.204 | .839 | -.013 | .996 | 1.004 |
| | Family Obligations | .125[a] | 2.118 | .035 | .137 | .996 | 1.004 |
| | Childcare | .092[a] | 1.550 | .122 | .101 | .996 | 1.004 |
| | Late Rehearsals | -.041[a] | -.688 | .492 | -.045 | .973 | 1.028 |
| | Long Rehearsals | -.054[a] | -.896 | .371 | -.058 | .972 | 1.029 |
| | Too Many Rehearsals | -.011[a] | -.176 | .860 | -.012 | .973 | 1.028 |
| | Loss of Enjoyment | -.003[a] | -.054 | .957 | -.004 | .909 | 1.100 |
| | Diminishing Skill Level | -.026[a] | -.389 | .698 | -.025 | .817 | 1.224 |
| | Director's personality | .191[a] | 3.043 | .003 | .195 | .861 | 1.162 |
| | Director's competence | .175[a] | 2.824 | .005 | .182 | .889 | 1.125 |
| | New director | .130[a] | 2.190 | .030 | .142 | .978 | 1.023 |
| | No/little input into music selection | .125[a] | 2.014 | .045 | .131 | .899 | 1.113 |
| | Music difficulty (for ensemble) | .247[a] | 2.944 | .004 | .189 | .486 | 2.058 |
| | Music is too easy | .258[a] | 4.480 | .000 | .281 | .986 | 1.014 |
| | Music is too often uninteresting or unexciting | .166[a] | 2.711 | .007 | .175 | .918 | 1.089 |
| | Decrease in quality of the ensemble | .192[a] | 3.189 | .002 | .204 | .940 | 1.064 |
| | Unsupportive environment | .165[a] | 2.663 | .008 | .172 | .892 | 1.121 |
| | Too critical of environment | .163[a] | 2.555 | .011 | .165 | .850 | 1.176 |
| | Unbalanced instrumentation/seating | .123[a] | 2.000 | .047 | .130 | .915 | 1.093 |

(Continued)

**Table 72 (continued)**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 2 | Participation fee | -.046[b] | -.789 | .431 | -.052 | .974 | 1.027 |
| | Personal Finances | -.052[b] | -.911 | .363 | -.060 | .983 | 1.017 |
| | Scheduling conflicts | -.086[b] | -1.435 | .153 | -.094 | .908 | 1.102 |
| | Distance to travel | -.049[b] | -.822 | .412 | -.054 | .919 | 1.088 |
| | Transportation problems | -.052[b] | -.901 | .369 | -.059 | .970 | 1.031 |
| | Professional Obligations | -.018[b] | -.316 | .753 | -.021 | .987 | 1.013 |
| | Personal Health | -.027[b] | -.478 | .633 | -.031 | .993 | 1.007 |
| | Family Obligations | .077[b] | 1.326 | .186 | .087 | .957 | 1.045 |
| | Childcare | .078[b] | 1.371 | .172 | .089 | .993 | 1.007 |
| | Late Rehearsals | -.048[b] | -.830 | .407 | -.054 | .972 | 1.029 |
| | Long Rehearsals | -.083[b] | -1.424 | .156 | -.093 | .960 | 1.041 |
| | Too Many Rehearsals | -.063[b] | -1.074 | .284 | -.070 | .936 | 1.068 |
| | Loss of Enjoyment | -.108[b] | -1.702 | .090 | -.111 | .802 | 1.247 |
| | Diminishing Skill Level | -.086[b] | -1.329 | .185 | -.087 | .784 | 1.275 |
| | Director's personality | .107[b] | 1.636 | .103 | .107 | .753 | 1.328 |
| | Director's competence | .071[b] | 1.050 | .295 | .069 | .721 | 1.387 |
| | New director | .071[b] | 1.201 | .231 | .078 | .919 | 1.088 |
| | No/little input into music selection | .029[b] | .452 | .652 | .030 | .775 | 1.290 |
| | Music difficulty (for ensemble) | .124[b] | 1.404 | .162 | .092 | .414 | 2.413 |
| | Music is too often uninteresting or unexciting | -.070[b] | -.790 | .430 | -.052 | .416 | 2.406 |
| | Decrease in quality of the ensemble | .052[b] | .698 | .486 | .046 | .600 | 1.668 |
| | Unsupportive environment | .074[b] | 1.127 | .261 | .074 | .765 | 1.307 |
| | Too critical of environment | .072[b] | 1.080 | .281 | .071 | .739 | 1.353 |
| | Unbalanced instrumentation/seating | .016[b] | .251 | .802 | .016 | .761 | 1.314 |

a. Predictors: (Constant), Music Difficulty (for individual)
b. Predictors: (Constant), Music Difficulty (for individual), Music Too Easy
c. Dependant Variable: Competence Subscale

## Stepwise Multiple Regression of Barriers to Music Participation and Relatedness

A stepwise multiple regression analysis was used to determine the extent to which the 26 barriers music participation variables predicted the satisfaction of subjects' needs for *Relatedness*, as measured by their scores on the BPNMS *Relatedness* subscale. Table 73 summarizes the regression model for the BPNMS scores on the *Relatedness* subscale,

operationally used to define satisfaction of subjects' psychological need for *Relatedness*. Music difficulty (for individual) significantly contributed to the prediction of subjects' *Relatedness* scores ($p < .000$), None of the other barriers to music participation variables made significant contributions to satisfying subjects' need for *Relatedness* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 73**
*Summary of the Regression Model for the Relatedness Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .317[a] | .100 | .097 | .735 | .100 | 26.222 | 1 | 235 | .000 | 2.032 |

a. Predictors: (Constant), Music Difficulty (for individual)

The amount of variance in the BPNMS scores explained by subjects' ratings of the variable music difficulty (for individual) was 9.7%. Music difficulty (for individual) significantly predicted the extent to which subjects' psychological need for *Relatedness* was satisfied ($s^2\% = 9.7\%$; $p < .000$). The Durbin-Watson statistic of 2.032 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 73).

The prediction equation from the stepwise multiple regression is presented in Table 74. In the model, for every increase subjects' music difficulty (for individual) rating ($\beta = -.289$), the degree to which subjects' psychological need for *Relatedness* was satisfied

decreased by 28.9%. Collinearity statistics are presented in Table 75. The Tolerance and VIF coefficients for models indicate collinearity is not a concern.

**Table 74**
*Prediction Equation for Stepwise Multiple Regression for the Relatedness Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | *β* | Std. Error | *β* | | |
| 1 | (Constant) | 6.473 | .109 | | 59.603 | .000 |
| | Music Difficulty (for individual) | -.289 | .057 | -.317 | -5.121 | .000 |

**Table 75**
*Collinearity Statistics of Predictor Variables of the Relatedness Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Music Difficulty (for individual) | -.317 | -.317 | -.317 | 1.000 | 1.000 |

The excluded variables are presented in Table 76. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The

Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 76**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | Participation fee | -.116[a] | -1.866 | .063 | -.121 | .977 | 1.023 |
| | Personal Finances | -.100[a] | -1.608 | .109 | -.105 | .988 | 1.012 |
| | Scheduling conflicts | -.106[a] | -1.692 | .092 | -.110 | .971 | 1.030 |
| | Distance to travel | -.093[a] | -1.477 | .141 | -.096 | .955 | 1.048 |
| | Transportation problems | -.088[a] | -1.415 | .158 | -.092 | .996 | 1.004 |
| | Professional Obligations | -.078[a] | -1.266 | .207 | -.082 | .999 | 1.001 |
| | Personal Health | -.089[a] | -1.437 | .152 | -.094 | .996 | 1.004 |
| | Family Obligations | .066[a] | 1.067 | .287 | .070 | .996 | 1.004 |
| | Childcare | .036[a] | .586 | .558 | .038 | .996 | 1.004 |
| | Late Rehearsals | .023[a] | .368 | .713 | .024 | .973 | 1.028 |
| | Long Rehearsals | -.026[a] | -.418 | .676 | -.027 | .972 | 1.029 |
| | Too Many Rehearsals | .012[a] | .186 | .853 | .012 | .973 | 1.028 |
| | Loss of Enjoyment | -.027[a] | -.415 | .679 | -.027 | .909 | 1.100 |
| | Diminishing Skill Level | -.067[a] | -.982 | .327 | -.064 | .817 | 1.224 |
| | Director's personality | -.006[a] | -.084 | .933 | -.005 | .861 | 1.162 |
| | Director's competence | .058[a] | .877 | .382 | .057 | .889 | 1.125 |
| | New director | -.007[a] | -.113 | .910 | -.007 | .978 | 1.023 |
| | No/little input into music selection | -.081[a] | -1.243 | .215 | -.081 | .899 | 1.113 |
| | Music difficulty (for ensemble) | -.057[a] | -.642 | .522 | -.042 | .486 | 2.058 |
| | Music is too easy | -.021[a] | -.339 | .735 | -.022 | .986 | 1.014 |
| | Music is too often uninteresting or unexciting | -.023[a] | -.362 | .717 | -.024 | .918 | 1.089 |
| | Decrease in quality of the ensemble | .022[a] | .344 | .731 | .022 | .940 | 1.064 |
| | Unsupportive environment | .086[a] | 1.315 | .190 | .086 | .892 | 1.121 |
| | Too critical of environment | .110[a] | 1.646 | .101 | .107 | .850 | 1.176 |
| | Unbalanced instrumentation/seating | .034[a] | .525 | .600 | .034 | .915 | 1.093 |

a. Predictors: (Constant), Music Difficulty (for individual)
b. Dependant Variable: Relatedness Subscale

**Stepwise Multiple Regression of Satisfaction With Life Scale, Perceived Benefits of Participation, Current Participation, and BPNMS**

A stepwise multiple regression analysis was used to determine the extent to which the 12 SWLS, benefits of music participation, and current music participation variables predicted the satisfaction of subjects' psychological needs, as measured by their BPNMS scores. Due to a high level of multicollinearity ($r > .90$) among the current music participation variables, the only current music participation variables selected to be included in the stepwise multiple regression were the variables of participation in choir, band, orchestra, improvisation, private instruction, and "family music time." Table 77 summarizes the regression model for subjects' BPNMS scores, operationally used to define satisfaction of subjects' overall psychological needs for *Autonomy, Competence*, and *Relatedness*. In the final model, SWLS, quality of life, and current participation in improvisation significantly contributed to the prediction of subjects' BPNMS scores ($p = .004$) and were added to the equation. None of the other SWLS, benefits of music participation, or current music participation made significant contributions ($p \geq .05$) to the satisfaction of subjects' psychological needs, and were excluded from the multiple regression analysis.

In the first model, the amount of variance in the BPNMS scores explained by subjects' SWLS scores was 12.1%. Subjects' SWLS scores significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 12.1$; %; $p < .000$).

The variable quality of life was added to the regression model. In the second model, both variables, 21.1% of the variance in scores was explained subjects' SWLS scores and quality of life ratings. Subjects' SWLS scores and quality of life ratings significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 12.1\%$; $p < .000$).

The variable, current participation in improvisation was added to the regression model. In the third and final model, 23.5% of the variance in BPNMS scores was explained subjects' SWLS scores, quality of life ratings, and participation in improvisation. SWLS scores, quality of life ratings, and participation in improvisation significantly predicted the extent to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied ($s^2\% = 23.5\%$; $p = .004$). The Durbin-Watson statistic of 1.884 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 77).

**Table 77**
*Summary of the Regression Model for the BPNMS (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .353[a] | .125 | .121 | .666 | .125 | 33.474 | 1 | 235 | .000 | |
| 2 | .467[b] | .218 | .211 | .627 | .093 | 27.926 | 1 | 234 | .000 | |
| 3 | .495[c] | .245 | .235 | .617 | .027 | 8.366 | 1 | 233 | .004 | 1.884 |

a. Predictors: (Constant), SWLS
b. Predictors: (Constant), SWLS, Quality of Life
c. Predictors: (Constant), SWLS, Quality of Life, Improvisation

The prediction equation from the stepwise multiple regression is presented in Table 78. In the first model, for every increase subjects' SWLS scores ($\beta$ = .046), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 4.6%.

In the second model, SWLS ($p$ < .000) and quality of life ($p$ < .000) significantly contributed to the satisfaction of subjects' need for *Autonomy, Competence,* and *Relatedness*. SWLS ($t$ = 5.436) had a similar effect as quality of life ($t$ = 5.285) on subjects' need for *Autonomy, Competence,* and *Relatedness*. In the second model, for every increase in SWLS scores ($\beta$ = -.041), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 4.1%, when quality of life ratings were held constant. Alternatively, when SWLS scores were held constant, for every increase in quality of life ratings ($\beta$ = .175), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 17.5%.

In the final model, SWLS ($p$ < .000), quality of life ($p$ < .000), and current participation in improvisation ($p$ = .004) significantly contributed to the satisfaction of subjects' need for *Autonomy, Competence,* and *Relatedness*. SWLS ($t$ = 5.739) had a slightly effect on subjects' need for *Autonomy, Competence,* and *Relatedness* than did quality of life ($t$ = 5.060). Current participation in improvisation ($t$ = 2.892) had the least effect on *Autonomy, Competence,* and *Relatedness*. For every increase in SWLS scores ($\beta$ = .043), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 4.3%, when quality of life ratings and a

current participation in improvisation were held constant. When SWLS scores and current participation in improvisation were held constant, the unstandardized Beta Coefficient supported the conclusion that for every increase in quality of life ratings ($\beta$ = .165), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 16.5%. When SWLS scores and quality of life ratings were held constant, for every increase in participation in improvisation ($\beta$ = .103), the degree to which subjects' psychological need for *Autonomy, Competence,* and *Relatedness* were satisfied increased by 10.3%.

**Table 78**
*Prediction Equation for Stepwise Multiple Regression for the BPNMS*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | ***β*** | **Std. Error** | ***β*** | | |
| 1 | (Constant) | 3.988 | .230 | | 17.353 | .000 |
| | SWLS | .046 | .008 | .353 | 5.786 | .000 |
| 2 | (Constant) | 3.140 | .270 | | 11.613 | .000 |
| | SWLS | .041 | .008 | .317 | 5.436 | .000 |
| | Quality of Life | .175 | .033 | .308 | 5.285 | .000 |
| 3 | (Constant) | 2.969 | .273 | | 10.883 | .000 |
| | SWLS | .043 | .007 | .330 | 5.739 | .000 |
| | Quality of Life | .165 | .033 | .291 | 5.060 | .000 |
| | Improvisation | .103 | .036 | .166 | 2.892 | .004 |

There was minimal overlap among the predictor variables. Pearson-Product moment correlation coefficients for the predictor variables are presented in Table 79. There were very weak correlations among SWLS, Quality of Life, and Current Participation in

Improvisation. Collinearity statistics are presented in Table 80. The Tolerance and VIF coefficients for the models indicate collinearity was not a concern.

**Table 79**
*Pearson-Product Moment Correlation among SWLS, Quality of Life, and Improvisation*

| | SWLS | Quality of Life |
|---|---|---|
| **SWLS** | 1.000 | |
| **Quality of Life** | .119 | 1.000 |
| **Improvisation** | -.070 | .088 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 80**
*Collinearity Statistics of Predictor Variables on the BPNMS*

| | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| **Model** | | **Zero-order** | **Partial** | **Part** | **Tol.** | **VIF** |
| 1 | (Constant) | | | | | |
| | SWLS | .353 | .353 | .353 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | SWLS | .353 | .335 | .314 | .986 | 1.014 |
| | Quality of Life | .345 | .327 | .305 | .986 | 1.014 |
| 3 | (Constant) | | | | | |
| | SWLS | .353 | .352 | .327 | .979 | 1.021 |
| | Quality of Life | .345 | .315 | .288 | .976 | 1.024 |
| | Improvisation | .168 | .186 | .165 | .986 | 1.015 |

The excluded variables are presented in Table 81. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the

variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 81**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | ***t*** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | Overall Musicianship | .202[a] | 3.357 | .001 | .214 | .988 | 1.013 |
| | Overall Health | .266[a] | 4.517 | .000 | .283 | .993 | 1.007 |
| | Quality of Life | .308[a] | 5.285 | .000 | .327 | .986 | 1.014 |
| | Social Life | .262[a] | 4.429 | .000 | .278 | .987 | 1.013 |
| | Family Life | .270[a] | 4.581 | .000 | .287 | .987 | 1.013 |
| | Choir | .163[a] | 2.688 | .008 | .173 | .989 | 1.012 |
| | Band | .171[a] | 2.841 | .005 | .183 | .999 | 1.001 |
| | Orchestra | .138[a] | 2.265 | .024 | .146 | .993 | 1.007 |
| | Improvisation | .194[a] | 3.236 | .001 | .207 | .995 | 1.005 |
| | Private Instruction | .169[a] | 2.804 | .005 | .180 | .999 | 1.001 |
| | *'family music time'* | .183[a] | 3.038 | .003 | .195 | .994 | 1.006 |
| 2 | Overall Musicianship | -.052[b] | -.611 | .542 | -.040 | .454 | 2.202 |
| | Overall Health | .057[b] | .593 | .554 | .039 | .358 | 2.794 |
| | Social Life | .065[b] | .714 | .476 | .047 | .410 | 2.437 |
| | Family Life | .125[b] | 1.659 | .098 | .108 | .586 | 1.707 |
| | Choir | .122[b] | 2.094 | .037 | .136 | .969 | 1.032 |
| | Band | .128[b] | 2.198 | .029 | .143 | .976 | 1.024 |
| | Orchestra | .125[b] | 2.176 | .031 | .141 | .991 | 1.009 |
| | Improvisation | .166[b] | 2.892 | .004 | .186 | .986 | 1.015 |
| | Private Instruction | .141[b] | 2.462 | .015 | .159 | .991 | 1.009 |
| | *'family music time'* | .160[b] | 2.795 | .006 | .180 | .988 | 1.012 |
| 3 | Overall Musicianship | -.085[c] | -.998 | .319 | -.065 | .447 | 2.239 |
| | Overall Health | .028[c] | .288 | .774 | .019 | .354 | 2.828 |
| | Social Life | .041[c] | .459 | .647 | .030 | .407 | 2.458 |
| | Family Life | .124[c] | 1.668 | .097 | .109 | .586 | 1.707 |
| | Choir | -.056[c] | -.536 | .593 | -.035 | .297 | 3.367 |
| | Band | .032[c] | .425 | .671 | .028 | .558 | 1.791 |
| | Orchestra | -.056[c] | -.513 | .608 | -.034 | .273 | 3.664 |
| | Private Instruction | -.009[c] | -.074 | .941 | -.005 | .245 | 4.090 |
| | *'family music time'* | .072[c] | .678 | .498 | .044 | .291 | 3.434 |

a. Predictors: (Constant), SWLS
b. Predictors: (Constant), SWLS, Quality of Life
c. Predictors: (Constant), SWLS, Quality of Life, Improvisation
d. Dependant Variable: Psychological Needs Composite Scale

**Stepwise Multiple Regression of Satisfaction With Life Scale, Perceived Benefits of Participation, and Current Participation and Autonomy**

A stepwise multiple regression analysis was used to determine the extent to which 12 SWLS, benefits of music participation, and current music participation variables the satisfaction of subjects' need for *Autonom*y, as measured by their scores on *Autonomy* subscale of the BPNMS. Due to a high level of multiccollinearity ($r > .90$) among the current music participation variables, the only current music participation variables selected to be included in the stepwise multiple regression were the variables of participation in choir, band, orchestra, improvisation, private instruction, and "family music time." Table 82 summarizes the regression model for the BPNMS *Autonomy* scores, operationally used to define satisfaction of subjects' psychological need for *Autonomy*. In the final model, quality of life, SWLS, and current participation in 'family music time' significantly contributed to the prediction of subjects' *Autonomy* scores ($p < .000$), and were added to the equation. None of the other SWLS, benefits of music participation, or current music participation variables significantly contributed to satisfying subjects' need for *Autonomy* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 82**
*Summary of the Regression Model for the Autonomy Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | Durbin-Watson |
| 1 | .272[a] | .074 | .070 | .891 | .074 | 18.715 | 1 | 235 | .000 | |
| 2 | .318[b] | .101 | .094 | .880 | .028 | 7.186 | 1 | 234 | .008 | |
| 3 | .357[c] | .128 | .117 | .869 | .026 | 7.045 | 1 | 233 | .008 | 1.905 |

a. Predictors: (Constant), Quality of Life
b. Predictors: (Constant), Quality of Life, SWLS
c. Predictors: (Constant), Quality of Life, SWLS, *'family music time'*

In the first model, the amount of variance in the *Autonomy* scores explained by subjects' quality of life ratings was 7%. Quality of life ratings significantly predicted the extent to which subjects' psychological need for *Autonomy* was satisfied ($s^2$% = 7%; $p$ < .000).

The variable, SWLS was added to the stepwise multiple regression analysis. In the second model, 10.1% of the variance in scores was explained by the differences in subjects' quality of life ratings and SWLS scores. Quality of life and SWLS significantly predicted the extent to which subjects' psychological need for autonomy was satisfied ($s^2$% = 9.4%; $p$ = .008).

The variable, participation in 'family music time' was added to the stepwise multiple regression analysis. In the third and final model 11.7% of the variance in scores was explained by the differences in subjects' quality of life ratings, SWLS scores, and participation in "family music time." Quality of life, SWLS, and participation in 'family

music time' significantly predicted the extent to which subjects' psychological need for *Autonomy* was satisfied ($s^2$% = 11.7%; $p$ = .008). The Durbin-Watson statistic of 1.905 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 82).

The prediction equation from the stepwise regression is multiple presented in Table 83. For every increase subjects' quality of life ratings ($\beta$ = . 202), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 20.2%.

Quality of life ($p$ < .000) and SWLS ($p$ < .000) significantly contributed to the satisfaction of subjects' need for *Autonomy*. In the second model, Quality of life ($t$ = 4.033) had a greater effect than SWLS ($t$ = 2.681) on subjects' need for *Autonomy*. For every increase in quality of life ratings ($\beta$ = .187), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 18.7%, when SWLS scores were held constant. Alternatively, when quality of life ratings were held constant, for every increase in SWLS scores ($\beta$ = .028), the degree to which subjects' psychological need for autonomy was satisfied increased by 2.8%.

**Table 83**
*Prediction Equation for Stepwise Multiple Regression for the Autonomy Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | ***β*** | **Std. Error** | ***β*** | | |
| 1 | (Constant) | 3.623 | .269 | | 13.468 | .000 |
| | Quality of Life | .202 | .047 | .272 | 4.326 | .000 |
| 2 | (Constant) | 2.896 | .380 | | 7.628 | .000 |
| | Quality of Life | .187 | .046 | .252 | 4.033 | .000 |
| | SWLS | .028 | .011 | .167 | 2.681 | .008 |
| 3 | (Constant) | 2.650 | .386 | | 6.863 | .000 |
| | Quality of Life | .178 | .046 | .239 | 3.869 | .000 |
| | SWLS | .031 | .011 | .181 | 2.930 | .004 |
| | *'family music time'* | .129 | .049 | .163 | 2.654 | .008 |

In the third and final model, quality of life ($p = .004$), SWLS ($p < .000$), and current participation in 'family music time' ($p = .008$) significantly contributed to the satisfaction of subjects' need for *Autonomy*. Quality of life ratings ($t = 3.869$) had the greatest effect on subjects' need for *Autonomy*. SWLS ($t = 2.930$) had a similar effect on *Autonomy* as did current participation in 'family music time' ($t = 2.654$). For every increase in quality of life ratings ($\beta = .178$), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 17.8%, when SWLS scores and a current participation in 'family music time' were held constant. When quality of life ratings and current participation in 'family music time' were held constant, for every increase in SWLS scores ($\beta = .031$), the degree to which subjects' psychological need for *Autonomy* was satisfied increased by 3.1%. When quality of life ratings and SWLS scores were held

constant, for every increase in participation in ‘family music time’ ($\beta$ = .129), the degree to which subjects’ psychological need for *Autonomy* was satisfied increased by 12.9 %.

There was minimal overlap among the predictor variables. Pearson-Product moment correlation coefficients for the predictor variables are presented in Table 84. There were very weak correlations among quality of life, SWLS, and current participation in “family music time.” Collinearity statistics are presented in Table 85. The Tolerance and VIF coefficients for these models indicate collinearity was not a concern.

**Table 84**
*Pearson-Product Moment Correlation among Quality of Life, SWLS, ‘Family Music Time’*

| | **Quality of Life** | **SWLS** |
|---|---|---|
| **Quality of Life** | 1.000 | |
| **SWLS** | .119 | 1.000 |
| **‘Family Music Time’** | .067 | -.076 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 85**
*Collinearity Statistics of Predictor Variables on the Autonomy Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Quality of Life | .272 | .272 | .272 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Quality of Life | .272 | .255 | .250 | .986 | 1.014 |
| | SWLS | .197 | .173 | .166 | .986 | 1.014 |
| 3 | (Constant) | | | | | |
| | Quality of Life | .272 | .246 | .237 | .980 | 1.020 |
| | SWLS | .197 | .189 | .179 | .979 | 1.022 |
| | *'family music time'* | .166 | .171 | .162 | .988 | 1.012 |

The excluded variables are presented in Table 86. None of the variables were significant predictors of subjects' BPNMS scores ($p > .05$). Furthermore, all of the variables produced very low partial correlations and Beta values, indicating that the variables had minimal impact on the criterion variable, as measured by the BPNMS. The Tolerance and VIF coefficients also revealed that collinearity was not a concern for any of the variables.

**Table 86**

*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | SWLS | .167[a] | 2.681 | .008 | .173 | .986 | 1.014 |
| | Overall Musicianship | -.030[a] | -.318 | .751 | -.021 | .455 | 2.200 |
| | Overall Health | .034[a] | .324 | .747 | .021 | .358 | 2.792 |
| | Social Life | .102[a] | 1.044 | .297 | .068 | .411 | 2.435 |
| | Family Life | .158[a] | 1.934 | .054 | .125 | .587 | 1.703 |
| | Choir | .098[a] | 1.558 | .121 | .101 | .984 | 1.016 |
| | Band | .089[a] | 1.409 | .160 | .092 | .978 | 1.022 |
| | Orchestra | .109[a] | 1.742 | .083 | .113 | .999 | 1.001 |
| | Improvisation | .141[a] | 2.263 | .025 | .146 | .992 | 1.008 |
| | Private Instruction | .113[a] | 1.795 | .074 | .117 | .992 | 1.008 |
| | *'family music time'* | .148[a] | 2.376 | .018 | .154 | .996 | 1.005 |
| 2 | Overall Musicianship | -.038[b] | -.416 | .678 | -.027 | .454 | 2.202 |
| | Overall Health | .040[b] | .389 | .698 | .025 | .358 | 2.794 |
| | Social Life | .094[b] | .972 | .332 | .064 | .410 | 2.437 |
| | Family Life | .148[b] | 1.833 | .068 | .119 | .586 | 1.707 |
| | Choir | .121[b] | 1.932 | .055 | .126 | .969 | 1.032 |
| | Band | .098[b] | 1.563 | .119 | .102 | .976 | 1.024 |
| | Orchestra | .125[b] | 2.016 | .045 | .131 | .991 | 1.009 |
| | Improvisation | .156[b] | 2.528 | .012 | .163 | .986 | 1.015 |
| | Private Instruction | .119[b] | 1.916 | .057 | .125 | .991 | 1.009 |
| | *'family music time'* | .163[b] | 2.654 | .008 | .171 | .988 | 1.012 |
| 3 | Overall Musicianship | -.064[c] | -.700 | .485 | -.046 | .449 | 2.226 |
| | Overall Health | .011[c] | .110 | .912 | .007 | .354 | 2.826 |
| | Social Life | .080[c] | .839 | .402 | .055 | .409 | 2.444 |
| | Family Life | .137[c] | 1.722 | .086 | .112 | .584 | 1.711 |
| | Choir | -.050[c] | -.447 | .655 | -.029 | .305 | 3.276 |
| | Band | -.035[c] | -.405 | .686 | -.027 | .493 | 2.027 |
| | Orchestra | -.057[c] | -.477 | .634 | -.031 | .263 | 3.802 |
| | Improvisation | .063[c] | .556 | .579 | .036 | .290 | 3.444 |
| | Private Instruction | -.051[c] | -.469 | .639 | -.031 | .314 | 3.186 |

a. Predictors: (Constant), Quality of Life

b. Predictors: (Constant), Quality of Life, SWLS

c. Predictors: (Constant), Quality of Life, SWLS, *'family music time'*

d. Dependant Variable: Autonomy Subscale

**Stepwise Multiple Regression of Satisfaction With Life Scale, Perceived Benefits of Participation, and Current Participation and Competence**

A stepwise multiple regression analysis was used to determine the extent to which 12 SWLS benefits of music participation variables predicted the satisfaction of subjects' need for *Competence*, as measured by their scores on the *Competence* subscale of the BPNMS. Due to a high level of multiccollinearity ($r > .90$) among the current music participation variables, the only current music participation variables selected to be included in the stepwise multiple regression were the variables of participation in choir, band, orchestra, improvisation, private instruction, and "family music time." Table 87 summarizes the regression model for the BPNMS scores on *Competence* subscale, operationally used to define satisfaction of subjects' psychological need for *Competence*. In the final model, quality of life ratings, current participation in improvisation, and SWLS scores significantly contributed to the prediction of subjects' *Competence* scores ($p < .000$), and were added to the equation. None of the other SWLS, benefits of music participation, or current music participation variables made significant contributions to satisfying subjects' need for *Competence* ($p \geq .05$), and were excluded from the multiple regression analysis.

**Table 87**
*Summary of the Regression Model for the Competence Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .268[a] | .072 | .068 | .827 | .072 | 18.181 | 1 | 235 | .000 | |
| 2 | .321[b] | .103 | .095 | .815 | .031 | 8.064 | 1 | 234 | .005 | |
| 3 | .370[c] | .137 | .126 | .801 | .034 | 9.229 | 1 | 233 | .003 | 1.972 |

a. Predictors: (Constant), Quality of Life
b. Predictors: (Constant), Quality of Life, Improvisation
c. Predictors: (Constant), Quality of Life, Improvisation, SWLS

In the first model, the amount of variance in *Competence* scores explained by subjects' ratings of quality of life was 6.8%. Quality of life significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2$% = 6.8%; $p < .000$).

The variable, participation in improvisation was added to the stepwise multiple regression analysis. In the second model, 9.5% of the variance in scores was explained by the differences in subjects' ratings of quality of life and participation in improvisation. Quality of life ratings and participation in improvisation significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2$% = 9.5%; $p = .005$).

The variable, SWLS was added to the stepwise multiple regression analysis. In the third and final model, 12.6% of the variance in scores was explained by the differences in subjects' ratings of quality of life ratings, participation in improvisation, and SWLS

scores. Quality of life, participation in improvisation, and SWLS scores significantly predicted the extent to which subjects' psychological need for *Competence* was satisfied ($s^2$% = 11.7%; $p$ = .003). The Durbin-Watson statistic of 1.972 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 87).

The prediction equation from the stepwise multiple regression is presented in Table 88. In the first model, quality of life significantly contributed to the satisfaction of subjects' need for *Competence* ($p$ < .000). For every increase in subjects' quality of life ratings ($\beta$ = .185), the degree to which subjects' psychological need for *Competence* was satisfied increased by 18.5%.

**Table 88**
*Prediction Equation for Stepwise Multiple Regression for the Competence Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | ***β*** | **Std. Error** | ***β*** | | |
| 1 | (Constant) | 3.973 | .250 | | 15.916 | .000 |
| | Quality of Life | .185 | .043 | .268 | 4.264 | .000 |
| 2 | (Constant) | 3.809 | .253 | | 15.081 | .000 |
| | Quality of Life | .174 | .043 | .252 | 4.060 | .000 |
| | Improvisation | .133 | .047 | .177 | 2.840 | .005 |
| 3 | (Constant) | 3.042 | .354 | | 8.593 | .000 |
| | Quality of Life | .158 | .042 | .229 | 3.716 | .000 |
| | Improvisation | .145 | .046 | .192 | 3.128 | .002 |
| | SWLS | .029 | .010 | .187 | 3.038 | .003 |

In the second model, quality of life ($p < .000$) and current participation in improvisation ($p = .005$) significantly contributed to the satisfaction of subjects' need for *Competence*. Quality of life ($t = 4.060$) had a greater effect than current participation in improvisation ($t = 2.840$) on subjects' need for *Competence*. For every increase in quality of life ratings ($\beta = .174$), the degree to which subjects' psychological need for *Competence* was satisfied increased by 17.4%, when current participation in improvisation was held constant. Alternatively, when quality of life ratings were held constant, for every increase in current participation in improvisation ($\beta = .133$), the degree to which subjects' psychological need for *Competence* was satisfied increased by 13.3%.

In the third and final model, quality of life ($p < .000$), current participation in improvisation ($p = .002$), SWLS ($p < .003$) significantly contributed to the satisfaction of subjects' need for *Competence*. Quality of life ($t = 8.593$) had the greatest effect on subjects' need for *Competence*. Current participation in improvisation ($t = 3.128$) had a similar effect on *Competence* as SWLS ($t = 3.038$). In the final model, for every increase in quality of life ratings ($\beta = .158$), the degree to which subjects' psychological need for *Competence* was satisfied increased by 15.8%, when current participation in improvisation and SWLS scores were held constant. When Quality of life ratings and SWLS scores were held constant, for every increase in current participation in improvisation ($\beta = .145$), the degree to which subjects' psychological need for *Competence* was satisfied increased by 14.5%. When quality of life ratings and current participation in improvisation were held constant, for every increase in SWLS scores ($\beta =$

.029), the degree to which subjects' psychological need for *Competence* was satisfied increased by 2.9 %.

There was minimal overlap among the predictor variables. Pearson-Product moment correlation coefficients for the predictor variables presented in Table 89. There were very weak correlations among quality of life, current participation in improvisation, and SWLS. Collinearity statistics are presented in Table 90. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for these models.

**Table 89**
*Pearson-Product Moment Correlations among Quality of Life, Improvisation, and SWLS*

| | **Quality of Life** | **Improvisation** | **SWLS** |
|---|---|---|---|
| **Quality of Life** | 1.000 | .088 | .119 |
| **Improvisation** | .088 | 1.000 | -.070 |
| **SWLS** | .119 | -.070 | 1.000 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 90**
*Collinearity Statistics of Predictor Variables on the Competence Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | Quality of Life | .268 | .268 | .268 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | Quality of Life | .268 | .257 | .251 | .992 | 1.008 |
| | Improvisation | .199 | .183 | .176 | .992 | 1.008 |
| 3 | (Constant) | | | | | |
| | Quality of Life | .268 | .237 | .226 | .976 | 1.024 |
| | Improvisation | .199 | .201 | .190 | .986 | 1.015 |
| | SWLS | .201 | .195 | .185 | .979 | 1.021 |

The excluded variables are presented in Table 91. None of the variables were found to be significant predictors. Furthermore, all of the variables have very low partial correlations and Beta values, which indicate that the excluded variables had very little impact on the dependant variable. The Tolerance and VIF coefficients indicate collinearity was not a concern for any of the variables.

**Table 91**

*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | SWLS | .171[a] | 2.741 | .007 | .176 | .986 | 1.014 |
| | Overall Musicianship | -.092[a] | -.982 | .327 | -.064 | .455 | 2.200 |
| | Overall Health | -.016[a] | -.149 | .882 | -.010 | .358 | 2.792 |
| | Social Life | -.026[a] | -.266 | .790 | -.017 | .411 | 2.435 |
| | Family Life | .113[a] | 1.383 | .168 | .090 | .587 | 1.703 |
| | Choir | .135[a] | 2.152 | .032 | .139 | .984 | 1.016 |
| | Band | .165[a] | 2.631 | .009 | .169 | .978 | 1.022 |
| | Orchestra | .138[a] | 2.215 | .028 | .143 | .999 | 1.001 |
| | Improvisation | .177[a] | 2.840 | .005 | .183 | .992 | 1.008 |
| | Private Instruction | .160[a] | 2.569 | .011 | .166 | .992 | 1.008 |
| | 'family music time' | .168[a] | 2.708 | .007 | .174 | .996 | 1.005 |
| 2 | SWLS | .187[b] | 3.038 | .003 | .195 | .979 | 1.021 |
| | Overall Musicianship | -.126[b] | -1.363 | .174 | -.089 | .448 | 2.234 |
| | Overall Health | -.049[b] | -.469 | .640 | -.031 | .354 | 2.827 |
| | Social Life | -.051[b] | -.528 | .598 | -.035 | .407 | 2.454 |
| | Family Life | .113[b] | 1.398 | .164 | .091 | .587 | 1.703 |
| | Choir | -.041[b] | -.361 | .718 | -.024 | .300 | 3.332 |
| | Band | .085[b] | 1.028 | .305 | .067 | .558 | 1.791 |
| | Orchestra | -.043[b] | -.364 | .716 | -.024 | .273 | 3.659 |
| | Private Instruction | .029[b] | .228 | .820 | .015 | .246 | 4.068 |
| | 'family music time' | .069[b] | .598 | .550 | .039 | .291 | 3.431 |
| 3 | Overall Musicianship | -.139[c] | -1.528 | .128 | -.100 | .447 | 2.239 |
| | Overall Health | -.045[c] | -.435 | .664 | -.029 | .354 | 2.828 |
| | Social Life | -.063[c] | -.658 | .511 | -.043 | .407 | 2.458 |
| | Family Life | .102[c] | 1.279 | .202 | .084 | .586 | 1.707 |
| | Choir | -.007[c] | -.060 | .952 | -.004 | .297 | 3.367 |
| | Band | .084[c] | 1.029 | .305 | .067 | .558 | 1.791 |
| | Orchestra | -.030[c] | -.257 | .797 | -.017 | .273 | 3.664 |
| | Private Instruction | .002[c] | .013 | .990 | .001 | .245 | 4.090 |
| | 'family music time' | .079[c] | .700 | .485 | .046 | .291 | 3.434 |

a. Predictors: (Constant), Quality of Life

b. Predictors: (Constant), Quality of Life, Improvisation

c. Predictors: (Constant), Quality of Life, Improvisation, SWLS,

d. Dependant Variable: Competence Subscale

**Stepwise Multiple Regression of Satisfaction Life Scale, Perceived Benefits of Participation, and Current Participation and Relatedness**

A stepwise multiple regression analysis was used to determine the extent to which 12 SWLS, benefits of music participation, and current music participation variables predicted the satisfaction of subjects' needs for *Relatedness*, as measured by their scores on the BPNMS *Relatedness* subscale. Due to a high level of multiccollinearity ($r > .09$) among the current music participation variables, the only current music participation variables selected to be included in the stepwise multiple regression were the variables of participation in choir, band, orchestra, improvisation, private instruction, and "family music time." Table 92 summarizes the regression model for the BPNMS scores on the *Relatedness* subscale, operationally used to define satisfaction of subjects' psychological need for *Relatedness*. In the final model, SWLS scores and quality of life ratings significantly contributed to the prediction of subjects' *Relatedness* scores ($p < .000$), and were added to the equation. None of the other SWLS, benefits of music participation, or current music participation variables significantly contributed to satisfying subjects' need for *Relatedness* ($p \geq .05$ and were excluded from the multiple regression analysis

**Table 92**
*Summary of the Regression Model for the Relatedness Subscale (N = 237)*

| Model | *R* | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | *F* Change | df1 | df2 | Sig. *F* Change | |
| 1 | .473[a] | .224 | .220 | .683 | .224 | 67.654 | 1 | 235 | .000 | |
| 2 | .543[b] | .294 | .288 | .652 | .071 | 23.484 | 1 | 234 | .000 | 1.867 |

a. Predictors: (Constant), SWLS
b. Predictors: (Constant), SWLS, Quality of Life

In the first model, the amount of variance in the *Relatedness* scores explained by subjects' ratings of quality of life was 22%. Quality of life significantly predicted extent to which subjects' psychological need for *Relatedness* was satisfied ($s^2$% = 22%; $p <$ .000).

The variable quality of life was added to the stepwise multiple regression analysis. In the second and final model, 22.8% of the variance in scores was explained by the differences in subjects' SWLS scores and quality of life ratings. SWLS and quality of life significantly predicted the extent to which subjects' psychological need for *Relatedness* was satisfied ($s^2$% = 22.8%; $p <$ .000). The Durbin-Watson statistic of 1.867 showed that the residuals are uncorrelated, thus the assumption of independent errors was at an acceptable level (see Table 92).

The prediction equation from the stepwise multiple regression is presented in Table 93. In the first model, for every increase in subjects' SWLS scores ($\beta$ = . 067), the degree to which subjects' psychological need for *Relatedness* was satisfied increased by 6.7%.

In the second model, SWLS ($p < .000$) and quality of life ($p < .000$) significantly contributed to the satisfaction of subjects' need for *Relatedness*. Subjects' SWLS scores ($t = 7.927$) had a greater effect  quality of life ratings ($t = 4.846$) on subjects' need for *Relatedness*. In the final model, for every increase in SWLS scores ($\beta = .063$), the degree to which subjects' psychological need for *Relatedness* was satisfied increased by 6.3%, when quality of life ratings were held constant. Alternatively, when SWLS scores were held constant, for every increase in quality of life ratings ($\beta = .167$), the degree to which subjects' psychological need for *Relatedness* was satisfied increased by 16.7%.

**Table 93**
*Prediction Equation for Stepwise Regression Model for the Relatedness Subscale*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | Sig. |
|---|---|---|---|---|---|---|
| | | ***β*** | **Std. Error** | ***β*** | | |
| 1 | (Constant) | 4.057 | .237 | | 17.097 | .000 |
| | SWLS | .067 | .008 | .473 | 8.225 | .000 |
| 2 | (Constant) | 3.247 | .282 | | 11.531 | .000 |
| | SWLS | .063 | .008 | .441 | 7.972 | .000 |
| | Quality of Life | .167 | .034 | .268 | 4.846 | .000 |

There was minimal overlap among the predictor variables. There was a very low positive correlation among SWLS and quality of life ($r = .119$; $p = .068$). Collinearity statistics are presented in Table 94. The Tolerance and VIF coefficients for both models indicate collinearity was not a concern for these models.

**Table 94**
*Collinearity Statistics of Predictor Variables on the Relatedness Subscale*

| Model | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | | Zero-order | Partial | Part | Tol. | VIF |
| 1 | (Constant) | | | | | |
| | SWLS | .473 | .473 | .473 | 1.000 | 1.000 |
| 2 | (Constant) | | | | | |
| | SWLS | .473 | .462 | .438 | .986 | 1.014 |
| | Quality of Life | .320 | .302 | .266 | .986 | 1.014 |

The excluded variables are presented in Table 95. None of the variables were found to be significant predictors Furthermore, all of the variables have very low partial correlations and Beta values, which indicate that the excluded variables had very little impact on the dependant variable. The Tolerance and VIF coefficients indicate collinearity was not a concern for any of the variables.

**Table 95**
*Multiple Regression Equation Excluded Variables*

| Model 1 Excluded Variables[b] | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Collinearity Statistics | |
| **Model** | | **Beta In** | **t** | **Sig.** | **Partial *r*** | **Tol.** | **VIF** |
| 1 | Overall Musicianship | .196[a] | 3.464 | .001 | .221 | .988 | 1.013 |
| | Overall Health | .251[a] | 4.522 | .000 | .283 | .993 | 1.007 |
| | Quality of Life | .268[a] | 4.846 | .000 | .302 | .986 | 1.014 |
| | Social Life | .240[a] | 4.303 | .000 | .271 | .987 | 1.013 |
| | Family Life | .206[a] | 3.649 | .000 | .232 | .987 | 1.013 |
| | Choir | .071[a] | 1.228 | .221 | .080 | .989 | 1.012 |
| | Band | .098[a] | 1.708 | .089 | .111 | .999 | 1.001 |
| | Orchestra | .052[a] | .905 | .366 | .059 | .993 | 1.007 |
| | Improvisation | .100[a] | 1.744 | .082 | .113 | .995 | 1.005 |
| | Private Instruction | .101[a] | 1.760 | .080 | .114 | .999 | 1.001 |
| | ‘family music time’ | .080[a] | 1.392 | .165 | .091 | .994 | 1.006 |
| 2 | Overall Musicianship | -.002[b] | -.027 | .979 | -.002 | .454 | 2.202 |
| | Overall Health | .103[b] | 1.122 | .263 | .073 | .358 | 2.794 |
| | Social Life | .085[b] | .993 | .322 | .065 | .410 | 2.437 |
| | Family Life | .059[b] | .822 | .412 | .054 | .586 | 1.707 |
| | Choir | .034[b] | .608 | .544 | .040 | .969 | 1.032 |
| | Band | .059[b] | 1.059 | .291 | .069 | .976 | 1.024 |
| | Orchestra | .042[b] | .752 | .453 | .049 | .991 | 1.009 |
| | Private Instruction | .075[b] | 1.355 | .177 | .088 | .986 | 1.015 |
| | ‘family music time’ | .077[b] | 1.391 | .165 | .091 | .991 | 1.009 |

a. Predictors: (Constant), SWLS,
b. Predictors: (Constant), SWLS, Quality of Life
c. Dependant Variable: Relatedness Subscale

## Summary of Results

A total of 237 subjects participated in the current study. Two hundred and seven (87%) of subjects were over the age of 55. There were slightly more females (*n* = 124; 52.3%) than males (*n* = 113; 47.7%). The majority of subjects were Caucasian (*n* = 222; 93.7%), married (*n* = 188; 79.3%), and retired (*n* = 154; 65.0%). Nearly 80% (*n* = 189; 79.80%) of subjects had earned at least a bachelor’s degree, and 25 (10.5%) had a bachelor’s degree in music. Two hundred and eight (*n* = 208; 87.80%) subjects belong or

belonged to either a professional trade or white-collar profession, 13 (5.5%) of which were professional music educators, and 16 (6.8%) were professional musicians. The two most frequently indicated income levels were $100, 000 or higher (*n* = 55; 23.2%) and $40,000 to $59,999 (*n* = 48; 20.3%).

Regarding in-school music participation, subjects most frequently participated in general music during elementary school (*n* = 119; 50.21%) and middle school (*n* = 102; 42.86%). At some point during subjects' education, more than 85% of them participated in general music (*n* = 203; 85.65%). Band (*n* = 181; 76.37%) and choir (*n* = 154; 64.98%) were the next most frequently cited in-school music activities. More than 50% of the subjects most frequently participated in band (*n* = 126; 53.16%) during high school. More than 50% of the subjects indicated that they most frequently participated in general music (*n* = 119; 50.21%) during elementary school. In-school music activities that involved working with music technology (*n* = 22; 9.28%), composing and arranging (32; 13.50%), improvising (32; 13.50%), and participating in chamber music (*n* = 39; 16.46%) were among the least frequently citied activities.

Regarding out-of-school music participation, subjects most frequently participated in band (*n* = 202; 85.2%) at some point in subjects' lives. Over 75% of the subjects received private lessons (*n* =179; 75.5%); over 60% of the subjects participated in choir (*n* = 149; 62.9%); and more than 50% gave solo performances (*n* = 125; 52.7%) at some point in subjects' lives. Recording studio work (*n* = 23; 9.7%) was the least frequently cited out-of-school music activity. No single activity was cited by more than 50% of the subjects at any particular age-level. The most frequently citied music activities were band (n = 111;

46.84%), solo performance (*n* = 86; 36.29%), choral ensemble (*n* = 83; 35.02%), and private instruction (*n* = 70; 29.54%) all of which occurred during ages 14-18 years (i.e., high school years).

Current levels of the subjects' music participation appeared to be low. The majority of subjects rated their music participation in each activity as "never" or "seldom." Activities most frequently cited as "often" were band (*n* = 77; 32.5%) and choir (*n* = 48; 20.3%).

None of the potential music participation barriers emerged as particularly strong barriers. Scheduling conflicts emerged as the most frequently cited barrier, with 36% of the subjects (*n* = 86) selecting either "somewhat" or "very much." Over 70% of the subjects indicated either "not at all" or "a little" for all of the remaining barriers.

Subjects' perceptions regarding the benefits of music participation were generally positive. The contribution of music participation to family life was rated as the highest, with a mean score of 5.698 (SD = .196); and to social life, as the lowest, with a mean score of 4.711 (SD = .747). The mean scores for the contribution of music participation to musicianship, health, quality of life, and family life were all above 5.00, suggesting that music participation in NHIMA ensembles generally was perceived as providing positive experiences in subjects' lives. Subjects' subjective well being, as measured by SWLS, revealed that individuals generally were satisfied with life.

All composite and subscale mean scores were above the mid-point (i.e., 4), indicating that subjects' psychological needs were satisfied. The composite mean score of 5.294 supported that subject's psychological needs collectively were being satisfied generally.

Subjects' need for *Relatedness* (*M* = 5.974) was being satisfied the most, and the need for *Autonomy* (*M* = 4.760) was being satisfied the least, but the mean score was still above the mid-point of the BPNMS scale.

A Pearson-Product Moment correlation analyses were used to determine relationships among subjects' satisfaction of psychological needs and the background variables. The correlation analyses revealed weak positive and negative relationships among subjects' satisfaction of psychological needs and the demographic variables. There were weak positive and negative relationships among subjects' BPNMS scores and their in- and out-of-school music participation. The strongest relationships among subjects' BPNMS scores and in-school music participation were associated with subjects' participation in honor music groups, and in solo and ensemble festivals. The strongest relationships among subjects' BPNMS scores and out-of-school music participation were associated with subjects' participation in band, improvisation, musical theater, and private lessons.

Relationships among BPNMS, subjective well-being (i.e., SWLS), and perceived benefits of participation were positive, ranging from weak to moderately strong correlation coefficients. The strongest relationship was between the satisfaction of subjects' psychological need for *Relatedness* and their subjective well being (*r* = .473). The weakest relationship was between the satisfaction of subjects' psychological need for *Competence* and the contributions of music participation to subjects' musicianship (*r* = .156). There also was a moderately weak correlation between subjects' BPNMS scores and their quality of life ratings.

Low positive correlations existed among subjects' BPNMS scores and current music participation variables, ranging from .012 to .232. Although weak, the strongest correlation coefficients were produced among the *Competence* subscale scores and subjects' responses to participation variables of chamber music ($r$ = .232), band ($r$ = .201), and solo performance ($r$ = .201).

Most relationships among the BPNMS and perceived barriers to music participation were weak. The relationship between BPNMS and perceived music difficulty (i.e., for individuals) emerged as moderately strong and negative. The most frequently cited barrier to music participation was scheduling conflicts that had negatively weak relationships with BPNMS and the three BPNMS subscales.

Sixteen stepwise multiple regression analyses were used determine the extent to which background variables predicted the satisfaction of subjects' psychological needs. Regarding in-school music participation, the final regression model included participation in honor music groups was a significant predictor subjects' scores on both the BPNMS ($R^2$ = .027) and *Autonomy* subscale ($R^2$ = .036). In predicting subjects' scores on the *Competence* subscale, the final regression model ($R^2$ = .070) included participation in honor groups and solo and ensemble festivals as significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .039) included participation in class piano and in music technology as significant predictors.

Regarding out-of-school music participation, in predicting subjects' scores on BPNMS, the final regression model ($R^2$ = .099) included participation in band, in a Garage Band, and ensemble directing as significant predictors. In predicting subjects'

scores on the *Autonomy* subscale, the final regression model ($R^2$ = .097) included participation in band and ensemble directing as significant predictors. In predicting subjects' scores on the *Competence* subscale, the final regression model ($R^2$ = .104) included participation in band, solo performance, and in a Garage Band as significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .018) included participation as a professional performer as a significant predictor.

Regarding the barriers to music participation, in predicting subjects' scores on BPNMS, the final regression model ($R^2$ = .223) included music difficulty (for individual), music too easy, and scheduling conflicts as significant predictors. In predicting subjects' scores on the *Autonomy* subscale, the final regression model ($R^2$ = .150) included music difficulty (for individual) as a significant predictor. In predicting subjects' scores on the *Competence* subscale, the final regression model ($R^2$ = .231) included music difficulty (for individual) and music too easy were significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .097) included music difficulty (for individual) was a significant predictor.

Regarding SWLS, perceived benefits of participation, and current participation in predicting subjects' scores on BPNMS, the final regression model ($R^2$ = .235) included SWLS, quality of life, and improvisation as significant predictors. In predicting subjects' scores on the *Autonomy* subscale, the final regression model ($R^2$ = .117) included quality of life, SWLS, and 'family music time' as significant predictors. In predicting subjects' scores on the *Competence* subscale, quality of life, the final regression model ($R^2$ = .126)

included improvisation, and SWLS as significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .288) included quality of life and SWLS as significant predictors.

# CHAPTER V

# SUMMARY AND CONCLUSIONS

## Overview of the Study

The purpose of the study was to investigate the extent to which the psychological needs of adults, who participate in New Horizons International Music Association (NHIMA) ensembles, are being satisfied, and to examine the contributions of variables contributing to adults' participation in NHIMA ensembles. Additionally, the current study was designed to determine relationships among satisfaction of psychological needs and variables associated with music participation. The current study was designed to accomplish the following research objectives.

1. Identify and describe the following background variables of adults who participate in New Horizons International Music Association ensembles.

    a. Past musical activities and behaviors

    b. Current music activities and behaviors

    c. Perceived benefits of participation

    d. Subjects' subjective well-being

    e. Perceived barriers to participation

    f. Demographic information.

        i. Age

        ii. Sex

iii. Marital Status

iv. Profession/Vocation

v. Retirement Status

vi. Income

vii. Education

viii. Ethnicity

2. Determine the extent to which the psychological needs of *Autonomy, Competence,* and *Relatedness* are being satisfied within New Horizons International Music Association ensemble participants.

3. Determine the relationship among psychological needs and selected background variables within those who participate in New Horizons International Music Association ensembles.

Six hundred and seventy-six NHIMA participants were invited to complete the online survey. Of the 676 participants, 244 (36.09%) affirmed their consent to participate in the study as subjects and completed the online survey. Of the 244 subjects that consented to participate, 17 subjects' survey responses (2.51%) were not included in the data analysis due to incomplete data. Results, therefore, were based on 35.06% of the population sampled. A total of 237 subjects participated in the current study.

An online questionnaire was administered electronically to subjects, using *Qualtrics* (Qualtrics Labs Inc., 2009), an online commercial application service provider offering a

range of services including the ability to design, administer, and manage online surveys. Data collection occurred between December 1, 2010 and January 6, 2011. In the ***first section*** of the online questionnaire, subjects were required to indicate their past musical participation. In the ***second section*** of the questionnaire, subjects were required to indicate their current level of music participation. In both sections, subjects indicated their level of participation in various formal, non-formal, and informal music activities by using a 1-4 rating scale, associated with the following levels of participation: (a) 4 = Often, (b) 3 = Occasionally, (c) 2 = Seldom, or (d) 1 = Never.

The focus of the ***third section*** of the questionnaire was on the extent to which the psychological needs of *Autonomy*, *Competence*, and *Relatedness* were being satisfied within subjects in the current study. These psychological needs were measured using an adaption of the *Basic Psychological Needs Scale* (!!! INVALID CITATION !!!). Deci and Ryan recommended modifying the original 21 BPNS items to suit any particular context, such as a research study. Consistent with the research by Deci and Ryan (2009), the *Basic Psychological Needs in Music Scale* (BPNMS), administered as the ***third section*** of the online questionnaire, was based on the original 21 BPNS items. Cronbach's coefficient alpha reliability of the composite BPNMS was .848, of the *Autonomy* subscale was .694, of the *Competence* subscale was .572, and of the *Relatedness* subscale was .803.

Each item in the ***third section*** of the questionnaire required a rating of 1 to 7, ranging from "not true at all" (1) to "very true" (7), with a midpoint of "somewhat true" (4). A score for each psychological need construct was determined by summing the ratings for

the *Autonomy*, *Competence* and *Relatedness* subscales. The *Autonomy* subscale consisted of items 1, 4, 8, 11, 17, 20, and 22. The *Competence* subscale consisted of items 3, 5, 10, 13, 15, and 19. The *Relatedness* subscale consisted of items 2, 6, 7, 9, 12, 16, 18, and 21. Items 3, 4, 7, 11, 15, 16, 18, 19, 20, and 22 were negatively written, and therefore, reversed when data were compiled and codified.

In the ***fourth section*** of the questionnaire, subjects responded to five items regarding the perceived benefits of participating in NHIMA ensembles. Using the same rating scale as in the previous section, subjects indicated their opinions about the effects of NHIMA participation on: (a) musicianship, (b) overall health, (c) quality of life, (d) social life, and (e) family life. In the ***fifth section***, subjects completed the *Satisfaction With Life Scale* (SWLS; Deiner, 1984) that consisted of five items designed to measure subjects' subjective well-being. Cronbach's coefficient alpha reliability of these five items was .864.

In the ***sixth section*** of the questionnaire, using a four-point scale (4 = Often, 3 = Occasionally, 2 = Seldom, 1 = Never), subjects indicated the extent to which their daily lives interfered with music participation. In the ***seventh section*** of the questionnaire, participants completed items focused demographic information, including age, sex, marital status, profession/vocation, retirement status, income, education, and ethnicity.

*Predictive Analytics SoftWare* (SPSS Inc., 2009) was used to analyze the data. Descriptive statistics were used to summarize subjects' past and current musical activities, perceived barriers to participation, subjective well being (i.e., as measured by the SWLS items), perceived benefits of participation, and demographic information.

Correlation analyses were used to determine the relationships among subjects' past and current musical activities, perceived barriers to participation, subjective well being, perceived benefits of participation, demographic information, and satisfaction of psychological needs (as measured by the BPNMS).

To further investigate the aforementioned variables, stepwise multiple regression analyses were used to determine the extent to which subjects' past and current music activities and behaviors, subjective well being, perceived barriers to music participation, and demographic variables predict the extent to which their psychological needs were satisfied. Predictor variables included in the regression analyses were: (a) total time in past in-school music activities and behaviors, (b) total time in past out-of-school music activities and behaviors, (c) current music activities and behaviors, (d) subjective well being, (e) benefits of music participation, and (f) music participation barriers. The criterion variable was subjects' satisfaction of psychological needs, as measured by the *Basic Psychological Needs in Music Scale* (BPNMS) and its subscales (i.e., *Autonomy*, *Competence* and *Relatedness*). The adjusted $R^2$ coefficients from the multiple regression analyses were used to determine the percentage of variance the predictor variables explained within the criterion variables. Beta coefficients were used to determine the importance of each predictor variable. The Durbin-Watson statistic was used to determine whether the assumption of independent errors was acceptable across each stepwise multiple regression analysis. The Tolerance and Variance Inflation Factor (VIF) coefficients were used to determine if the assumption of no multicollinearity was being meant within the analyses.

## Summary of Results

A total of 237 subjects participated in the current study. Two hundred and seven (87%) of subjects were over the age of 55. There were slightly more females (*n* = 124; 52.3%) than males (*n* = 113; 47.7%). The majority of subjects were Caucasian (*n* = 222; 93.7%), married (*n* = 188; 79.3%), and retired (*n* = 154; 65.0%). Nearly 80% (*n* = 189; 79.80%) of subjects had earned at least a bachelor's degree, and 25 (10.5%) had a bachelor's degree in music. Two hundred and eight (*n* = 208; 87.80%) subjects belong or belonged to either a professional trade or white-collar profession, 13 (5.5%) of which were professional music educators, and 16 (6.8%) were professional musicians. The two most frequently indicated income levels were $100, 000 or higher (*n* = 55; 23.2%) and $40,000 to $59,999 (*n* = 48; 20.3%). Data obtained regarding subjects' demographic variables are consistent generally with previous research (e.g. Black, 1997; Bowen, 1995; Coffman, 2002, 2008; Rohwer, 2005a, 2010; Rohwer & Coffman, 2006).

Regarding in-school music participation, subjects most frequently participated in general music during elementary school (*n* = 119; 50.21%) and middle school (*n* = 102; 42.86%). At some point during subjects' education, more than 85% of them participated in general music (*n* = 203; 85.65%). Band (*n* = 181; 76.37%) and choir (*n* = 154; 64.98%) were the next most frequently cited in-school music activities. More than 50% of the subjects most frequently participated in band (*n* = 126; 53.16%) during high school. More than 50% of the subjects indicated that they most frequently participated in general music (*n* = 119; 50.21%) during elementary school. In-school music activities that involved working with music technology (*n* = 22; 9.28%), composing and arranging (32; 13.50%),

improvising (32; 13.50%), and participating in chamber music (*n* = 39; 16.46%) were among the least frequently citied activities.

Regarding out-of-school music participation, subjects most frequently participated in band (*n* = 202; 85.2%) at some point in subjects' lives. Over 75% of the subjects received private lessons (*n* =179; 75.5%); over 60% of the subjects participated in choir (*n* = 149; 62.9%); and more than 50% gave solo performances (*n* = 125; 52.7%) at some point in subjects' lives. Recording studio work (*n* = 23; 9.7%) was the least frequently cited out-of-school music activity. No single activity was cited by more than 50% of the subjects at any particular age-level. The most frequently citied music activities were band (n = 111; 46.84%), solo performance (*n* = 86; 36.29%), choral ensemble (*n* = 83; 35.02%), and private instruction (*n* = 70; 29.54%) all of which occurred during ages 14-18 years (i.e., high school years).

Current levels of the subjects' music participation appeared to be low. The majority of subjects rated their music participation in each activity as "never" or "seldom." Activities most frequently cited as "often" were band (*n* = 77; 32.5%) and choir (*n* = 48; 20.3%).

None of the potential music participation barriers emerged as particularly strong barriers. Scheduling conflicts emerged as the most frequently cited barrier, with 36% of the subjects (*n* = 86) selecting either "somewhat" or "very much." Over 70% of the subjects indicated either "not at all" or "a little" for all of the remaining barriers.

Subjects' perceptions regarding the benefits of music participation were generally positive. The contribution of music participation to family life was rated as the highest,

with a mean score of 5.698 (SD = .196); and to social life, as the lowest, with a mean score of 4.711 (SD = .747). The mean scores for the contribution of music participation to musicianship, health, quality of life, and family life were all above 5.00, suggesting that music participation in NHIMA ensembles generally was perceived as providing positive experiences in subjects' lives. Subjects' subjective well being, as measured by SWLS, revealed that individuals generally were satisfied with life. According to Deiner, (1984) the author of the SWLS, the mean score ($M$ = 28.49; $SD$ = 5.43) for the sample of the current study revealed that individuals were mostly satisfied with life. Based on the mean score, life was considered to be enjoyable for participants, and the major domains of life (e.g. work, school, family, and friends) were going well. Not all domains of life, however, were perfect, but the growth and challenge inspired by the domains that remain unsatisfied positively contributed to the overall subjective well-being of the participants (Deiner, 1984).

All composite and subscale mean scores were above the mid-point (i.e., 4), indicating that subjects' psychological needs were satisfied. The composite mean score of 5.294 supported that subject's psychological needs collectively were being satisfied generally. Subjects' need for *Relatedness* ($M$ = 5.974) was being satisfied the most, and the need for *Autonomy* ($M$ = 4.760) was being satisfied the least, but the mean score was still above the mid-point of the BPNMS scale.

Pearson-Product Moment correlation analyses were used to determine relationships among subjects' satisfaction of psychological needs and the background variables. The correlation analyses revealed weak positive and negative relationships among subjects'

satisfaction of psychological needs and the demographic variables. There were weak positive and negative relationships among subjects' BPNMS scores and their in- and out-of-school music participation. The strongest relationships among subjects' BPNMS scores and in-school music participation were associated with subjects' participation in honor music groups, and in solo and ensemble festivals. The strongest relationships among subjects' BPNMS scores and out-of-school music participation were associated with subjects' participation in band, improvisation, musical theater, and private lessons.

Relationships among BPNMS, subjective well-being (i.e., SWLS), and perceived benefits of participation were positive, ranging from weak to moderately strong correlation coefficients. The strongest relationship was between the satisfaction of subjects' psychological need for *Relatedness* and their subjective well being ($r$ = .473). The weakest relationship was between the satisfaction of subjects' psychological need for *Competence* and the contributions of music participation to subjects' musicianship ($r$ = .156). There also was a moderately weak correlation between subjects' BPNMS scores and their quality of life ratings.

Low positive correlations existed among subjects' BPNMS scores and current music participation variables, ranging from .012 to .232. Although weak, the strongest correlation coefficients were produced among the *Competence* subscale scores and subjects' responses to participation variables of chamber music ($r$ = .232), band ($r$ = .201), and solo performance ($r$ = .201).

Most relationships among the BPNMS and perceived barriers to music participation were weak. The relationship between BPNMS and perceived music difficulty (i.e., for

individuals) emerged as moderately strong and negative. The most frequently cited barrier to music participation was scheduling conflicts that had negatively weak relationships with BPNMS and the three BPNMS subscales.

Sixteen stepwise multiple regression analyses were used determine the extent to which background variables predicted the satisfaction of subjects' psychological needs. Regarding in-school music participation, the final regression model included participation in honor music groups was a significant predictor subjects' scores on both the BPNMS ($R^2$ = .027) and *Autonomy* subscale ($R^2$ = .036). In predicting subjects' scores on the *Competence* subscale, the final regression model ($R^2$ = .070) included participation in honor groups and solo and ensemble festivals as significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .039) included participation in class piano and in music technology as significant predictors.

Regarding out-of-school music participation, in predicting subjects' scores on BPNMS, the final regression model ($R^2$ = .099) included participation in band, in a Garage Band, and ensemble directing as significant predictors. In predicting subjects' scores on the *Autonomy* subscale, the final regression model ($R^2$ = .097) included participation in band and ensemble directing as significant predictors. In predicting subjects' scores on the *Competence* subscale, the final regression model ($R^2$ = .104) included participation in band, solo performance, and in a Garage Band as significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .018) included participation as a professional performer as a significant predictor.

Regarding the barriers to music participation, in predicting subjects' scores on BPNMS, the final regression model ($R^2$ = .223) included music difficulty (for individual), music too easy, and scheduling conflicts as significant predictors. In predicting subjects' scores on the *Autonomy* subscale, the final regression model ($R^2$ = .150) included music difficulty (for individual) as a significant predictor. In predicting subjects' scores on the *Competence* subscale, the final regression model ($R^2$ = .231) included music difficulty (for individual) and music too easy were significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .097) included music difficulty (for individual) was a significant predictor.

Regarding SWLS, perceived benefits of participation, and current participation in predicting subjects' scores on BPNMS, the final regression model ($R^2$ = .235) included SWLS, quality of life, and improvisation as significant predictors. In predicting subjects' scores on the *Autonomy* subscale, the final regression model ($R^2$ = .117) included quality of life, SWLS, and 'family music time' as significant predictors. In predicting subjects' scores on the *Competence* subscale, quality of life, the final regression model ($R^2$ = .126) included improvisation, and SWLS as significant predictors. In predicting subjects' scores on the *Relatedness* subscale, the final regression model ($R^2$ = .288) included quality of life and SWLS as significant predictors.

## Conclusions and Implications

Previous research demonstrated that engagement in leisure activities potentially satisfies psychological needs, especially persons' needs for feeling competent and related

to others (Hutchinson, Loy, Kleiber, & Datillo, 2003). The present study provides evidence that music participation contributes to satisfying individual's psychological needs for *Autonomy*, *Competence*, and *Relatedness*. An important purpose of the current study was determining the value of using the self-determination theory as a theoretical framework for further examining adults' motivations to participate in music activities.

Self-determination theory (SDT), in part, is based upon understanding and describing how human beings' psychological needs are satisfied, and thereby, are motivated by their participation in everyday and special day activities. Initial results of correlation results in the current study reveal that there may be little association among various past and current music activities and the satisfaction of adults' psychological needs for *Autonomy*, *Competence*, and *Relatedness*. Additional analyses of the data collected for the current study, however, supports the premise that some of specific music activities modestly contribute to satisfying adults' psychological needs. This finding represents a small but important step in studying the applications of SDT in understanding adults' participation in music throughout their lives, especially since no previous research has examined the satisfaction of psychological needs among music participants, as represented in SDT.

Subjects' mean scores on the BPNMS were above the mid-point (i.e. 4), which indicated that subjects' psychological needs were satisfied. The composite mean score of 5.29 supported the notion that subject's psychological needs collectively were being satisfied generally. Subjects' *Autonomy* score ($M$ = 4.76) reflected that the subjects generally were autonomous, meaning that each subjects' actions were self-directed, and those actions resulted from genuine desires. Subjects' *Competence* score ($M$ = 5.01)

reflected that subjects generally perceived that they were able to control effectively, and were satisfied with, the outcomes of music participation. Subjects' *Relatedness* (*M* = 5.97) score revealed that subjects' generally felt connected to the other members of the ensemble.

There were some theoretical issues that need to be addressed for SDT to be useful in future music education research and to explain adult motivations for continued music participation. Within the field of music, there seems to be multiple dimensions of *Autonomy* that may be noticeably different from other disciplines. In the case of large music ensemble participation, for example, there is little expectation of decision-making responsibility in terms of how music is to be performed. Conductors or directors of large music ensembles traditionally make such decisions. Obviously, some large music ensemble participants, at least, seem to believe they lack the necessary background that qualifies them to be in a position to make decisions for large music ensembles. Furthermore, there is evidence to suggest that some persons simply do not desire such decision-making responsibility, regardless of their abilities (Kruse, 2005). Accordingly, *Autonomy* also is demonstrated by the level of input persons have regarding the management and mission of a music ensemble. Persons, who have a position of leadership, such as board members, or who provide some service for a music ensemble, such as transportation of instruments or marketing, all exhibit varying degrees of *Autonomy*. Additionally, a degree of *Autonomy* simply involves the decision to participate; that is, *Autonomy* is required for a person to make a decision to volunteer to participate in music regardless of his or her music abilities. Persons who participate of

their own volition exhibit higher levels of *Autonomy* than persons who participate because of another person's influence. In terms of measuring levels of *Autonomy*, it is unclear what these findings imply, but these behaviors and responses are all aspects of *Autonomy* that require additional research.

Correlation analyses revealed weak positive and negative relationships among subjects' satisfaction of psychological needs and the background variables. These results possibly were produced by the lack of variability among subjects. The correlation analyses of the relationships among demographic data associated with profession, income, professional musician, music educator, and subjects' BPNMS scores produced negative correlation coefficients. These results possibly revealed that subjects maintained high personal standards when completing BPNMS items.

There were weak positive and negative relationships among subjects' BPNMS scores and their in- and out-of-school music participation. The strongest relationships among subjects' BPNMS scores and in-school music participation were associated with subjects' participation in honor music groups, and in solo and ensemble festivals. Among the out-of-school music participation variables, strong positive relationships existed among band participation, composite BPNMS scores, and scores on the *Autonomy* and *Competence* BPNMS subscales. This finding was not surprising because NHIMA ensembles were predominantly bands. Strong positive relationships emerged among the out-of-school music participation variables of composing and arranging, music camp, and musical theater. Perhaps this result occurred because of the informal and non-formal nature of those music activities, each requiring an increased degree of intrinsic motivation to

facilitate participation. The out-of-school music participation variables of ensemble directing and professional musician also emerged with strong, positive relationships. This result possibly emerged because each of these music activities require a greater degree of engagement and leadership abilities than typical ensemble members employ.

Relationships among BPNMS, subjective well-being (i.e., SWLS), and perceived benefits of participation were positive, ranging from weak to moderately strong correlation coefficients. The strongest relationship was between the satisfaction of subjects' psychological need for *Relatedness* and their subjective well-being ($r$ = .473). The weakest relationship was between the satisfaction of subjects' psychological need for *Competence* and the contributions of music participation to subjects' musicianship ($r$ = .156). This finding was perhaps due to high standards of subjects who were professional musicians. There also was a moderately weak correlation between subjects' BPNMS scores and their quality of life ratings, possibly supporting previous research that revealed persons have a desire to use their leisure time productively (Gates, 1991; Stebbins, 1992).

Low positive correlations existed among subjects' BPNMS scores and current music participation variables, ranging from .012 to .232. Although weak, the strongest correlation coefficients were produced among the *Competence* subscale scores and subjects' responses to participation variables of chamber music ($r$ = .232), band ($r$ = .201), and solo performance ($r$ = .201). The relationships among satisfying subjects' psychological need for *Competence* and their chamber music and solo performance participation was not surprising, because those activities generally require a higher degree of competence than large ensemble participation. Because a majority of subjects were

band members, the relationship between band participation and satisfying their psychological need for *Competence* was not surprising.

Most relationships among the BPNMS and perceived barriers to music participation were weak. The relationship between BPNMS and perceived music difficulty (i.e., for individuals) emerged as moderately strong and negative. This finding was understandable, because it is reasonable to assume that music participation is dependent upon persons' feelings that they are capable of participating in music activities. The most frequently cited barrier to music participation was scheduling conflicts that had negatively weak relationships with BPNMS and the three BPNMS subscales. These findings were understandable if subjects' perceived that scheduling conflicts were entirely out of their control. In which case, any scheduling conflicts were contextual circumstances that had little bearing on the satisfaction of subjects' psychological needs.

An impetus for the current study was the plethora of motivation variables examined in previous research. Limiting the present examination to satisfying adults' psychological needs for *Autonomy*, *Competence* and *Relatedness* was believed to facilitate a more parsimonious examination of adult motivations to continue participating in music than previous investigations of the topic. The theoretical framework and parsimonious nature of SDT is a strength of the present study. The lack of theoretical framework and parsimony among the participation and barrier variables is a weakness of the current study. For example, in the current study no attempt was made to define 'family music time' for the subjects. It is possible that there are significant differences among subjects' personal definitions of 'family music time.' Furthermore, there may also be differences

among researchers' notions of 'family music time.' Future researchers should attempt to examine the effect of a more selective list of music participation and barrier variables that have a stronger theoretical grounding than occurred in the current study.

In terms of the potential barriers to music participation, perceived music difficulty (i.e., music being too difficult and too easy) and scheduling conflicts seem to be the only variables that potentially influence adults' decisions to cease music participation, despite the rather extensive list of perceived barriers, derived from a review of past research. One explanation for this finding and disparity is that the current study involved people who have sustained their music participation across several years. Research regarding the barriers to music participation may be served best by selecting subjects from a population of individuals who stopped participating music at some time in their lives.

Both music difficulty for individuals and scheduling conflicts have inverse relationships with psychological needs satisfaction. In other words, as needs satisfaction increases the strength of potential barriers decreases, and the converse is true. This finding, however, is not the case when music is perceived as too easy. According to the data analyses of the current study, psychological needs often are satisfied among individuals who perceive that "music being too easy" is a potential *barrier* to music participation. This finding is not unexpected because among persons who believe that easy music is a potential barrier to their continued music participation, they also are generally most likely to pursue other activities to satisfy the psychological needs examined in the current study.

Findings from the current study seem to confirm an aspect of Csikszentmihalyi's (1993) flow theory. Participation in music seems to be more likely to be sustained when there is a moderate level of challenge, and when that challenge is attainable. Music participation seems more likely to cease when the music is perceived as either too difficult or too easy. Future researchers may uncover additional evidence of this phenomenon with non-linear regression models that examine influences of music difficulty on continued music participation.

Findings from the current study regarding subjective well-being and benefits of music participation seem to support the hypothesis that psychological needs satisfaction also is influenced by general life circumstances. This conclusion seems to be corroborated by the data analyses. Although many background variables significantly contributed to psychological needs satisfaction ($p \leq .05$) in the current study, the results revealed that the variables only modestly contribute to differences among individuals' psychological needs satisfaction, suggesting that there are unidentified variables that satisfy persons' psychological needs as associated with music participation.

In general, band participation seems to contribute to satisfying of adults' psychological needs, especially their needs for *Autonomy* and *Competence*. This finding is associated with in- and out-of-school participation, including honor music group participation. Furthermore, various music activities (e.g., chamber music ensembles, solo and ensemble festivals, ensemble directing, and music improvisation) may be viewed as outgrowths of band participation, where foundational music skills and knowledge begins and develops. If participation in a Garage Band and 'family music time' are added to the

list of aforementioned music activities, it may be reasonable to conclude that multiple and varied types of music participation positively influence satisfying adults' psychological needs.

Past researchers have concluded that music participation often begins *informally* in the home, and have identified informal music in the home as an important factor in music learning and development (e.g. Busch, 2005; Chiodo, 1998; Coffman, 2002; Larsen, 1983). The emergence of Garage Band participation and 'family music time' as important predictors of satisfying adults' psychological needs for *Autonomy* and *Competence* seems to support these past research findings. If learning is considered as a multiphase process that begins *informally* in the home, and then, is *formalized* in school, the emergence of Garage Band participation and 'family music time' as important factors is understandable. Furthermore, findings of the current study seem to support the premise that acquiring increased empirical information about *informal* music learning in the home has implications for advancing music educators' understandings of motivation, learning, and development.

Findings related to both in- and out-of-school music participation support the conclusion that participation in combinations of *formal*, *non-formal,* and *informal* music activities contributes to the satisfying adults' psychological needs. In-school band participation is a type of *formal* participation. Participation in honor music groups and solo and ensemble festivals are *non-formal* types of participation because they are sponsored and organized by educational institutions, but occur separately from *formal* educational and curricular activities. Lastly, out-of-school Garage Band and 'family

music time' participation are types of *informal* music participation. Results of the current study seem to support the hypothesis that adults with high levels of psychological needs satisfaction actively participate in *formal, non-formal,* and *informal* music activities.

In the current study, it remains unclear why participating in class piano, using music technology, and being a professional music performer emerged as variables contributing to satisfying adults' needs for *Relatedness,* and seem not to contribute to satisfying the other two psychological needs. One explanation may be that the nature of class piano and music technology participation is more conducive to forming relationships than other ensemble-oriented or conductor-led music activities. Previous research has demonstrated that class piano may foster a sense of camaraderie since participants generally are working on the same music (Bowles, 1991). Music technology activities may encourage participation among a small number of persons, facilitate increased collaboration among participants, and allow participants to work within minimum time constraints, and thereby, satisfy individuals' psychological need for *Relatedness.* A reason for the emergence of the professional performer variable as an important part of satisfying subjects' needs for *Relatedness* may be that a professional music performer's primary motivation for voluntarily participating in a community music activity possibly is for the social benefits, since professionals' psychological needs for *Autonomy* and *Competence* presumably are being satisfied elsewhere.

There are some implications for music education based on the findings of the current study. Results of the current study support previous research showing a connection between past experiences and adults' continued music participation (Busch, 2005,

Coffman, 1995, Larsen, 1983). One implication of this finding is that music educators should do all that they can to encourage students to participate in multiple and varied types of music activities. Music participation, whether in- or out-of-school, or whether *formal*, *informal*, or *non-formal*, seems to be important in satisfying adults' psychological needs for *Autonomy*, *Competence*, and *Relatedness*. Furthermore, satisfying the need for *Autonomy* may be achieved by participating in activities other than music performance. Music experiences, such as selecting music repertoire, suggesting music performance opportunities, or accepting positions of leadership in music ensembles, may positively contribute to individuals acquiring feelings of *Autonomy*.

Similar to Larsen (1983), findings from the current study support the notion that persons tend to participate in activities as adults that are similar to and supported by past activities and learning. Since the majority of subjects were band participants, the fact that the results emphasized the importance of band participation in satisfying psychological needs is understandable. If elementary and secondary school students are provided opportunities that encourage them to participate in multiple and varied types of music experiences and activities in- and out-of-school, they may be best equipped to seek out and find increased and varied music activities as adults that satisfy their psychological needs and sustain their music participation.

In sum, a number of broad generalizations may be warranted. First, as in previous research, the importance of past experiences. Past experiences seem to support the satisfaction of the psychological need. by providing the foundational skills that make future participation possible. Furthermore, persons seem to seek out experiences that are

similar to past experiences. This generalization seems warranted by the frequent emergence of past participation in band as a predictor of the psychological needs.

Second, the importance of multiple and varied types of music experiences in persons' formative years. This generalization seems warranted because of the emergence of variables that reflect *formal* participation (i.e. band), *informal* participation (i.e. Garage Band and 'family music time'), and *non-formal* participation (i.e. honor groups, and solo and ensemble festivals) as predictors of the psychological needs. Persons with multiple and varied types of music experiences presumably have stronger foundational skills to support the satisfaction of psychological needs and sustained participation than do persons with limited music experiences. Furthermore, because persons seem to seek out experiences similar to past experiences, those with multiple and varied past experiences presumably have a greater number of options in which to participate as adults than persons with limited experiences.

Third, the importance of broad perceptions and feelings toward one's own abilities and general life circumstances. This generalization seems warranted because of the emergence of the barrier variables 'music too difficult' and 'music too easy,' SWLS, and benefit to quality of life as predictors of the satisfaction of psychological needs. One's own perceptions and feelings of his or her abilities and general life circumstances may have a strong influence on whether participation is sustained through adulthood. Persons generally wish to feel that they are able to make a substantive contribution to a group or endeavor and that they are using their leisure time productively (Chiodo, 1997; Coffman, 2006; Rohwer & Coffman, 2006; Stebbins, 1982).

Lastly, based on the results of the current study, self-determination theory and research on psychological needs theory seem also to be valuable in advancing music educators' understanding of adults continued music participation. Additional research based on self-determination theory has much to offer music education researchers. Additionally, music education research based on self-determination also has much to offer music educators, school administrators, and education policy-makers, particularly as related to making decisions and designing experiences within music programs that motivate continued and life-long music learning. Based on self-determination theory, continued research on satisfying psychological needs among adults through music participation may provide insight into effectively structuring and implementing school music programs that are meaningful and useful to individuals as they enter adulthood.

# REFERENCES


Aliapoulios, A. A. (1969). *A study of the adult amateur choral organization in the United States and the implication for adult education.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 7022443).

Anguiano, K. R. (2006). *Motivational predictors of continuing motivation and achievement for early adolescent instrumental music students.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3229641).

Arasi, M. T. (2006). *Adult reflections on a high school choral music program: Perceptions of meaning and lifelong influence.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3231924).

Arrindell, W. A., Meeuwesen, L., & Huyse, F. J. (1991). The satisfaction with life scale (SWLS): Psychometric properties in a non-psychiatric medical outpatients sample. *Personality and Individual Differences, 12*(2).

Asmus, E. P. (1985). Sixth graders' achievement motivation: Their views of success and failure. *Bulletin of Council for Research in Music Education, 86,* 1-13.

Asmus, E. P. (1986a). Achievement motivation characteristics of music education and music therapy students as identified by attribution theory. *Bulletin of Council for Research in Music Education, 86*(71-85).

Asmus, E. P. (1986b). Student beliefs about the causes of success and failure in music: A study of achievement motivation. *Journal of Research in Music Education, 30,* 14-21.

Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology, 34,* 2045-2068.

Balfe, J. H., & Heine, J. C. (1988). *Arts education beyond the classroom. ACA Arts research seminar series.* New York: American Council for the Arts.

Bell, C. L. (2000). *An examination of adult amateur community chorus and choral conductor rehearsal behavior, with implications for music education.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9959331).

Belz, M. J. D. (1994). *The German Gesangverein as a model of life-long participation in music.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9517334).

Bergonzi, L., & Smith, J. (1996). *Effects of arts education on art participation*. (ISBN 0-920765-47-8). Steven Locks Press.

Black, M. F. (1997). *The status of beginning/intermediate concert band programs for mature adults: A national survey.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9738215).

Bowen, C. K. (1995). *Adult community bands in the Southeastern United States: An investigation of current activity and background profiles of the participants.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9526740).

Bowles, C. L. (1991). Self-expressed adult music education interests and music experiences. *Journal of Research in Music Education, 39*(3), 191-205.

Buchanan, S. R. (1998). *Factors motivating non-music majors to participate in collegiate choral ensembles.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9830218).

Buness, D. J. (1979). *factors contributing to participation and non-participation in selected community choruses in Montana.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 7922710).

Busch, M. R. (2005). *Predictors of lifelong learning in music: A survey of individuals participating in performing ensembles at community colleges in Illinois.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3182229).

Cattell, R. B. (1973). Personality and mood by questionnaire: A handbook of interpretive theory, psychometrics, and practical procedures. San Francisco: Jossey-Bass.

Chen, H.-L. (1996). *An investigation of self-directed learning among non-music major adult piano learners in one-to-one piano instruction.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9635962).

Chiodo, P. A. (1997). *The development of lifelong commitment: A qualitative study of adult instrumental music participation.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9801280).

Choate, R. E. (Ed.). (1968). *Documentary report of the Tanglewood Symposium*. Washington, DC: Music Educators National Conference.

Clothier, R. I. (1967). *Factors influencing freshmen with high school band experience to elect or not to elect band membership at five liberal arts colleges in Iowa.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 6713671).

Coffin, J. D. G. (2005). *Why did we join? Why have we stayed? Membership in a women's barbershop chorus: A narrative inquiry into leadership, learning, and the development of voice through singing.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. MR10360).

Coffman, D. D. (1996). Musical backgrounds and interests of active older adult band members. *Dialogue in Instrumental Music Education, 20*(1), 25-34.

Coffman, D. D. (1999). Multidisciplinary perspectives on musicality: The Seashore Symposium. *Bulletin of the Council for Research in Music Education*(140), 1-27.

Coffman, D. D. (2002). Adult education. In R. Colwell & C. Richardson (Eds.), *The new handbook of research on music teaching and learning* (pp. 199-209). New York: Oxford University Press.

Coffman, D. D. (2006). Voices of experience: Interviews of adult community band members in Launceston, Tsmania, Australia. *International Journal of Community Music*. Retrieved from www.intljcm.com/articles/Volume%204/Coffman/Coffman.pdf

Coffman, D. D. (2007). An exploration of personality traits in older adult amateur musicians. *Research and Issues in Music Education, 5*(1), 1-12.

Coffman, D. D. (2008). Survey of New Horizons International Music Association musicians. *International Journal of Community Music, 1*(3), 375 - 390.

Coffman, D. D. (2009). Voices of experience: Lessons for older adult amateur musicians. In J. L. Kerchner & C. R. Abril (Eds.), *Musical experiences in our lives: Things we learn and meanings we make* (pp. 331-346).

Coffman, D. D., & Adamek, M. (1999). The contributions of wind band participation to quality of life of senior adults. *Music Therapy Perspectives, 17*(1), 27-31.

Coffman, D. D., & Adamek, M. (2001). Perceived social support of New Horizons Band participants. *Contributions to Music Education, 28*(1), 27-40.

Coffman, D. D., & Levy, K. M. (1997). Senior adult bands: Music's new horizon. *Music Educators Journal, 84*(3), 17-22.

Compton, B. R. (1979). *Amateur instrumental music in America, 1765 to 1810.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 7921959).

Cooper, T. L. (1996). *Adults' perceptions of piano study: Achievements, experiences, and interests.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9705996).

Cooper, T. L. (2001). Adults' perceptions of piano study: Achievements, experiences, and interests. *Journal of Research in Music Education, 49*(2), 156-168.

Costa-Giomi, E. (1989). Understanding your students: A theory of achievement motivation. *Triad, 52*(3), 17-18.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334.

Csikszenthihalyi, M. (1993). *Flow: The psychology of optimal experience*. New York: Cambridge University Press.

Csikszentmihalyi, M. (1993). *Flow: The psychology of optimal experience*. New York: Cambridge University Press.

Curran, J. M. (1982). *A design for the development and implementation of a beginning group piano curriculum for leisure age adults.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8215903).

Custodero, L. A. (1997). *An observational study of flow experience in young children's music learning.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 304383770).

Dabback, W. M. (2006). *Toward a model of adult music learning as a socially-embedded phenomenon.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3249214).

Darrough, G. P. (1990). *Older adult participants in selected retirement community choruses.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9101869).

deCharms, R. (1968). Personal causation: The internal affective determinants of behavior. New York: Academic Press.

Deci, E. L., & Ryan, R. M. (1985). Intrinsic Motivation and Self-Determination in Human Behavior. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology, 53*, 1024-1037.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of determination of behavior. *Psychological Inquiry, 11*(4), 227-268.

Deci, E. L., & Ryan, R. M. (2009). Basic Psychological Needs Scales. Retrieved from http://www.psych.rochester.edu/SDT/measures/bpns_scale.php

Deci, E. L., & Ryan, R. M. (Eds.). (2002). *Handbook of Self-Determination Research*. Rochester, NY: The University of Rochester Press.

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Block country. *Personality and Social Psychology Bulletin, 27*, 930-942.

Delano, A., & Royse, D. M. (1987). Factors influencing the decision of college freshmen to participate or not to participate in Kent State University music ensembles. *Contributions to Music Education, 14*, 9-17.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*, 542-575.

Dixon, R., & Turner, R. (2007). Electronic vs. conventional surveys. In R. A. Reynolds, R. Woods & J. D. Baker (Eds.), *Handbook of research on electronic surveys and measurements* (pp. 104-111). Hershey: Idea Group Inc.

Dregalla, D. M. (1993). *A descriptive study of the post-secondary musical/cultural behaviors and attitudes of participants and non-participants of instrumental music ensembles from two secondary schools in Eastern Massachusetts.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9401244).

Durham, J. A. (1987). Community college music survey. Niceville F. L.: Okaloosa-Walton Junior College.

Edington, D. V. (1992). *The process of deriving a structure for a program of music education for senior citizens.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9232686).

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72*(1), 218-232.

Ernst, R. (2001). Grand masters series: Music for life. *Music Educators Journal, 88*(1), 47.

Ernst, R., & Emmons, S. (1992). New horizons for senior adults. *Music Educators Journal, 79*(4), 30-34.

Evans, P. (2009). *Psychological needs and social-cognitive influences on participation in music activities.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3362780).

Faivre-Ransom, J. L. (2001). *An investigation of factors that influence adult participation in music ensembles based on various behavioral theories: A case study of the Norfolk Chorale.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3091192).

Farrell, P. (1972). *The meaning of the recreation experience in music as it is defined by urban adults who determined typal singer profiles through Q-technique.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 7313973).

Flowers, P. J., & Murphey, J. W. (2001). Talking about music: Interviews with older adults about their music education, preferences, activities, and reflections. *Update: Applications of Research in Music Education 20*(1), 26-32.

Fuller, J. E. (1973). *Colorado adult amateur bands and the implications for music educators.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 7401614).

Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*, 199-223.

Gates, J. T. (1988). *Recruiting and retention studies: Rethinking the assumptions*. Paper presented at the New York State School Music Association Annual Convention, November 29, 1988, Kiamesha Lake, New York, Kiamesha Lake, New York.

Gates, J. T. (1991). Music participation: Theory, research, and policy. *Bulletin of the Council for Research in Music Education*(109), 1-35.

Gerkowski, R. (1965). *A study of music offerings in thirty public school adult education programs in the United States.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 6606125).

Graessle, R. K. (1998). *Adult music programming in member schools of the National Guild of Community Schools of the Arts.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9905616).

Green, V. B. (1998). *Enhanced musical literacy through participation in the adult amateur/volunteer chorus: A descriptive study.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9839071).

Halfvarson, L. R., & O'Connor, J. A. (1970). A survey of adult and continuing music education in Illinois. University of Illinois at Urbana: Division of University Extension. (ED052449).

Hardin, L. E. (1997). *A descriptive analysis of Alabama public community and junior college music programs accredited by the Southern Association of Colleges and Schools.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9821537).

Heintzelman, T. D. (1988). *Adult concert band participation in the United States.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8909091).

Hinkle, L. B. (1987). *The meaning of choral experience to the adult membership of the German singing societies comprising the United Singers Federation of Pennsylvania.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8728017).

Holmquist, S. P. (1995). *A study of community choir members' school experiences.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9529054).

Horrigan, J. B. (2009). Home Broadband Adoption 2009. Retrieved February 9, 2010, from Pew Internet & American Life Project http://pewinternet.org/~/media//Files/Reports/2009/Home-Broadband-Adoption-2009.pdf

Horton, R. L. (1992). *An examination of the post-secondary school musical activities of the graduates of Delbarton School from 1972 through 1985.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9228483).

Hosler, N. M. (1992). *The brass band movement in North America: A survey of brass bands in the United States and Canada.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9227288).

Hutchinson, S. L., Loy, D. P., Kleiber, D. A., & Datillo, J. (2003). Leisure as a coping resource: Variations in coping with traumatic injury and illness. *Leisure Stciences, 25*, 143-161.

Hylton, J. B. (1981). Dimensionality in high school student participants' perceptions of the meaning of choral singing experience. *Journal of Research in Music Education, 29*(4), 287-303.

Ilardi, B. C., Leone, D., Kasser, R., & Ryan, R. M. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting. *Journal of Applied Social Psychology, 23*, 1789-1805.

Jaros, M. D. (2008). *Optimal experience in the choral rehearsal: A study of flow and affect among singers.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 304585576).

Jellison, J. A. (2000). How can all people continue to be involved in meaningful music participation? In C. K. Madsen (Ed.), *Vision 2020: The Housewright Symposium of the Future of Music Education* (pp. 109 - 152). Reston: MENC.

Johnson, R. G. (1982). *An investigation of the initiating interests of two sub-groups of adult beginning pianists participating in a class piano teaching environment.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8300280).

Jorgensen, E. R. (1993). On building social theories of music education. *Bulletin of the Council for Research in Music Education*(116), 33-50.

Kashdan, T. B., Julian, T., Merritt, K., & Uswatte, G. (2006). Social anxiety and posttraumatic stress in combat veterens: Relations to well-being and character strengths. *Behavior Research and Therapy, 44*, 561-583.

Kasser, T., Davey, J., & Ryan, R. M. (1992). Motivation, dependability, and employee-supervisor discrepancies in psychiatric vocational rehabilitation settings. *Rehabilitation Psychology, 37*, 175-187.

Kellmann, R. H. (1984). *The development of a music education program for older adults suitable for use in senior citizens centers, retirement homes, or other sites.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8505458).

Kraus, B. N. (2003). *Musicians in flow: Optimal experience in the wind ensemble rehearsal.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3084646).

Kruse, N. B. (2007). *Andragogy and music: Canadian and American models of music learning among adults.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3264178).

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79*, 367-384.

Larson, P. S. (1983). *An exploratory study of lifelong musical interest and activity: Case studies of twelve retired adults.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8311646).

Lawrence, S. J., & Dachinger, N. (1967). Factors relating to carryover of music training into adult life. *Journal of Research in Music Education, 15*(1), 23-31.

Lehman, P. (1986). The school music program: Descriptions and standards. Reston, VA: Music Educators National Conference.

Lundberg, N. R. (2006). *Self-determination theory: A mechanism to explain the association between sports participation and subjective well-being in adults with spinal cord injury.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3223073).

Mack, L. S. (1982). *Self-concept and musical achievement in the adult learner.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8302925).

Madsen, C. K. (Ed.). (2000). Vision 2020: The Housewright Symposium of the future of music education. Reston: MENC.

Maehr, M. L., Pintrich, P. R., & Linnenbrink, E. A. (2002). Motivation and Achievement. In R. Colwell & C. Richardson (Eds.), *The new handbook of research on music teaching and learning* (pp. 348-372). New York: Oxford University Press.

Mark, M. L. (1996). *Contemporary music education* (3rd ed.). Belmont: Shirmer.

Matthews, W. E. (2003). *Teaching with improvisation: Three case studies of flow experience in beginning adult singers.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 287971673).

McAllister, P. A. (1995). *Differential effects of controlling versus informational situations for motivation in music: An application of self-determination theory. (Doctoral dissertation). Availible from ProQuest Dissertations and Theses* database. (UMI No. 9604449).

McCullough, E. C. (1981). *An assessment of the musical needs and preferences of individuals 65 and over.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8118455).

Miksza, P. (2007). *Relationships among impulsivity, achievement goal motivation, practice behavior, and the performance achievement of high school wind players.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. Ph.D.).

Milton, G. K. (1982). *The effects of selected factors on the choice of freshmen instrumentalists in small colleges to participate or not to participate in the college concert band.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8222135).

Moser, S. R. (2003). *Beyond the Mozart effect: Age-related cognitive functioning in instrumental music participants.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3084208).

Mountford, R. D. (1978). Significant predictors of college band participation by college freshman with high school band experience. *Contributions to Music Education, 6,* 24-37.

Murphy, J., & Sullivan, G. (1968). Music in American society: An interpretive report of the Tanglewood Symposium. Washington D.C.: MENC.

Myers, D. E. (1986). *An investigation of the relationship between age and music learning in adults.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8621346).

Myers, D. E. (1995). Lifelong learning: An emerging research agenda fro music education. *Journal of Research in Music Education, 4*, 21 - 27.

Nazareth, T. C. (1999). A coherent framework for lifelong music education. *General Music Today, 12*(2), 17-19.

Orday, C. (1964). Music activities of high school graduate in two communities. *Journal of Research in Music Education, 12*(2), 172-176.

Patchen, J. H. (1986). *The relationships among current musical activity level and selected musical and demographic variables within an elderly population.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8710539).

Patterson, F. C. (1985). *Motivational factors contributing to participation in community bands of the Montachusett region of North Central Massachusetts.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8520664).

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*(2), 164-172.

Peterman, W. J. (1954). *An investigation of influences contributing to the post-school musical activities of adults in the city of Milwaukee, Wisconsin.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 0010311).

Pike, P. D. (2001). *Leisure piano lessons: A case study of lifelong learning.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3018335).

Qualtrics Labs Inc. (2009). Qualtrics 12.0. Provo, UT: Qualtrics Labs, Inc. Retrieved from www.qualtrics.com

Rainie, L. (2010). Internet, broadband, and cell phone statistics. Retrieved February 9, 2010, from Pew Internet & American Life Project http://www.pewinternet.org/~/media//Files/Reports/2010/PIP_December09_update.pdf

Roberts, L. D. (2007). Equivalence of electronic and off-line measures. In R. A. Reynolds, R. Woods & J. D. Baker (Eds.), *Handbook of research on electronic surveys and measurements* (pp. 97-103). Hershey: Idea Group Inc.

Robertson, W. D. (1992). *A survey of music education programs for senior citizens in Mecklenburg County, North Carolina.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9303945).

Rohwer, D. A. (2005a). A case study of adult beginning instrumental practice. *Contributions to Music Education, 32*(1), 45.

Rohwer, D. A. (2005b). Teaching the Adult Beginning Instrumentalist: Ideas from Practitioners. *International Journal of Music Education, 23*(1), 37-47.

Rohwer, D. A. (2008). Health and wellness issues for adult band musicians. [Article]. *Medical Problems of Performing Artists, 23*(2), 54-58.

Rohwer, D. A. (2009). Perceived Instructional Needs of Middle School and Senior Citizen Band Members. [Article]. *Journal of Music Teacher Education, 18*(2), 62-73.

Rohwer, D. A. (2010). Church musicians' participation perceptions: Applications to community music. *Research & Issues in Music Education, 8*(1), 2-2.

Rohwer, D. A., & Coffman, D. D. (2006). Relationships between wind band membership, activity level, spirituality, and quality of life in older adults. *Research Perspectives in Music Education, 10*, 21-27.

Royse, D. M. (1989). *Significant predictors of concert band membership continuation or discontinuation by nonmusic major students at three selected universities.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9006135).

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of Self-Determination Research*. Rochester, NY: University of Rochester Press.

Ryan, R. M., & Powelson, C. L. (1991). Autonomy and relatedness as fundamental to motivation and education. *Journal of Experiemntal Education, 60*(1), 49-66.

Rybak, C. A. (1995). *Older adults and "flow": Investigating optimal experience in selected music leisure activities.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9611711).

Seago, T. E. D. (1993). *Motivational factors influencing participation in selected Southern Baptist church choirs.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9320319).

Secrest, J. D. (1982). *Continuing education in music: A study of successful practices, innovative strategies, and current trends.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8302981).

Simmons, D. W. (1962). *The motivations and musical backgrounds of participants and non-participants in selected community choruses.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 6303333).

Spell, G. M. (1989). *Motivational factors and selected sociodemographic characteristics of Georgia community chorus participants as measured by the Education Participation Scale, the Community Chorus Participation Scale, and the Personal Inventory Form.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9018368).

Spencer, W. D. (1996). *An attitude assessment of amateur musicians in adult community bands.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9714061).

SPSS Inc. (2009). PASW Statistics 18. Chicago, Ill.: SPSS.

Stebbins, R. A. (1982). Serious leisure: A conceptual statement. *The Pacific Sociological Review, 25*(2), 251-272.

Stebbins, R. A. (1992). *Amateurs, Professionals, and Serius Leisure*. Montreal and Kingston: McGill-Queen's University Press.

Stern, J. (1968). *A plan for developing an adult music education program in Charlotte, North Carolina.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 6811143).

Sue, V. M., & Ritter, L. A. (2007). *Conducting online surveys*. Los Angeles: Sage Publication Inc.

Tatum, M. E. (1985). *A descriptive analysis of the status of music programs in selected retirement residences and senior citizens' centers in the Southeastern United States.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 8608958).

Thaller, G. P. (1999). *The community contributions, recruitment, and retention practices of select adult community bands in eastern Massachusetts.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9961808).

Tiede, C. H. (1970). *The development of Minnesota community bands during the nineteenth century.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 7118827).

Tipps, J. W. (1992). *Profile characteristics and musical backgrounds of community chorus participants in the Southeastern United States.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9234255).

Titmus, C. J. (1996). Adult education: Concepts and principles. In A. C. Tuijnman (Ed.), *Interntional Encyclopedia of Audlt Education and Training* (2nd ed., pp. 9-17). Paris: Pergamon.

Tsugawa, S. (2009). *Senior adult music learning, motivation, and meaning construction in two New Horizons ensembles.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 3392131).

US Department of Health and Human Services. (2005). 2005 National Health Interview Survey. Retrieved from ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/2005/English/QADULT.pdf

Van Der Kamp, M. (1996). Participation: Role of motivation. In A. C. Tuijnman (Ed.), *International Encyclopedia of Adult Education and Training* (2nd ed., pp. 565-569). Paris.

Vincent, P. M. (1997). *A study of community choruses in Kentucky and implications for music education.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9735637).

Vispoel, W. P., & Austin, J. R. (1995). Success and failure in junior high school: A critical incident approach to understanding students' attributional beliefs. *American Educational Research Journal*.

Ware, J. E., Kosinski, M., & Dewey, J. E. (2000). *How to Score Version 2 of the SF-36® Health Survey*. Lincoln, RI: Quality Metric Incorporated.

Weiner, B. (1974). An attributional theory of achievement motivation and emotion. *Psychological Review, 92,* 548-573.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66*, 297-333.

Wilhjelm, C. C. J. (1998). *A case study of the Ridgewood Concert Band, a New Jersey community band dedicated to life-long learning.* (Doctoral dissertation). Availible from ProQuest Dissertations and Theses database. (UMI No. 9839135).

Ye, J. (2007). Overcoming challenges to conducting online surveys. In R. A. Reynolds, R. Woods & J. D. Baker (Eds.), *Handbook of research on electronic surveys and measurements* (pp. 83-89). Hershey: Idea Group Inc.

# APPENDIX A

## UNCG IRB NOTICE

Subject: IRB Notice
Date: Wednesday, September 29, 2010 4:14 PM
From: IRB <irbcorre@uncg.edu>
To: <psink@triad.rr.com>
Cc: <kadougla@uncg.edu>, <cifarrio@uncg.edu>, <irbcorre@uncg.edu>
Conversation: IRB Notice

To: Patricia Sink
Music
250 Music Building

From: UNCG IRB

Date: 9/29/2010

RE: Notice of IRB Exemption
Exemption Category:
Study #: 10-0342Study Title: A Descriptive Analysis of the Psychological Needs of Adults' Participating in Music Ensembles: A Survey of the New Horizon International Music Association Ensemble Participants

This submission has been reviewed by the above IRB and was determined to be exempt from further review according to the regulatory category cited above under 45 CFR 46.101(b).

Study Description:

The purpose of this study is to study the characteristics of adults who participate in a New Horizons International Music Association ensemble.

Investigator's Responsibilities

Please be aware that any changes to your protocol must be reviewed by the IRB prior to being implemented. The IRB will maintain records for this study for three years from the date of the original determination of exempt status.

CC:Ken Douglas, Chris Farrior, (ORED), Non-IRB Review Contact, (ORC), Non-IRB Review Contact

# APPENDIX B

## SAMPLE LETTER

Directors Name
Ensemble
Address

Dear Sir,

My name is Ken Douglas and I am a doctoral candidate at University of North Carolina at Greensboro (UNCG). I would like to invite the members of your New Horizons International Music Association ensemble to participate in my doctoral research project.

I am interested in researching those who participate in New Horizons Ensembles and would like it very much to include your ensemble as a part of my research. Currently, I am developing a questionnaire that examines ensemble member's past and current musical experiences and activities. Hopefully, the results will be useful primary and secondary music educators when developing and implementing curriculum.

I would like to be provided with member names and email address so that I may contact them individually, via email, in order to individually solicit their participation for the study. The study is being conducted online, and should take approximately 20 minutes to complete. The questionnaire can be taken at the each person's convenience. Participation is voluntary. Furthermore, if you so desire, I will be happy to provide you with the results of the research. If you would like to be included in the research, please send member names and email address to kdouglas@utm.edu or 213 Cleveland St. Martin, TN 38237.

I am committed to developing the appropriate instruments and approaches to data collection. The project will be conducted myself and will be supervised by Dr. Patricia Sink from the school of music at UNCG. The research has been reviewed and approved by UNCG Institutional Review Board for Research Involving Human Participants.

If you need further information in support of this project please contact me by email at kdouglas@utm.edu, or by phone (731)332-1643.

Sincerely,

Kenneth A. Douglas

# APPENDIX C

## CONTINUED PARTICIPATION IN MUSIC QUESTIONNAIRE

**Informed Consent**

*A Descriptive Analysis of the Psychological Needs of Adults' Participating in music Ensembles: A Survey of the New Horizon International Music Association Ensemble Participants*

November 29, 2010

You are being invited to participate in a research study about New Horizons International Music Association ensemble participants. This study is being conducted by Kenneth A Douglas, a doctoral student in the School of Music at the University of North Carolina, Greensboro, under the guidance of Dr. Patricia Sink.

There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you provide will be used to study the characteristics of those who voluntarily participate in New Horizons music ensembles. The questionnaire will take about 10 -15 minutes to complete. The information collected may not benefit you directly, but the information learned in this study should provide more general benefits to researchers in the field of music education, and to secondary music educators.

This survey is anonymous. You will not be asked to provide your name or any other information that may identify you. Email addresses, or any other form of electronic information are **not** be linked to individual response data. No one will be able to identify you or your answers, and no one will know whether you participated in the study. Individuals from University of North Carolina, Greensboro and the Institutional Review Board may inspect these records. Should the data be published, no individual information will be disclosed.

Your participation in this study is voluntary. By completing this survey, you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer for any reason.

If you have any questions about the study, please contact Kenneth A. Douglas at kadougla@uncg.edu or (731) 332-1643, or Dr. Patricia Sink at psink@triad.rr.com or (336) 334-5469.

University of North Carolina at Greensboro Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact Eric Allen in the Office of Research Compliance at UNCG at (336) 256-1482.

☐ By clicking the submit button and beginning the survey, I indicate my willingness to voluntarily take part in the study. I certify that I am 18 years old or older and acknowledge that I have read and understand the above consent form.

☐ I do I wish to participate.

**Section I – Past Musical Activities and Behaviors**

Past musical experiences in school

| IN SCHOOL | GR 1 | GR 2 | GR 3 | GR 4 | GR 5 | GR 6 | GR 7 | GR 8 | GR 9 | GR 10 | GR 11 | GR 12 | College/ Univ. | None |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **General/ Classroom Music** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Choral ensemble** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Instrumental ensemble (band)** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Orchestral Ensemble** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Chamber Ensemble** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Solo/Ensemble festival** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Honor groups** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Composing/ Arranging** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Improvising** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Class piano** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Musical theater** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Music history** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Music theory** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Music technology** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Music composition** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Music appreciation** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Section I – Past Musical Activities and Behaviors (continued)**

Past musical experiences out of school (alone, with others, or in church or other community group)

| OUT OF SCHOOL | Age 0-5 | Age 6-10 | Age 11-13 | Age 14-18 | Age 19-22 | Age 23-29 | Age 30-39 | Age 40-49 | Age 50-59 | Age 60-69 | Age 70+ | None |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Choral ensemble** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Instrumental ensemble (band)** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Orchestral ensemble** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Chamber Ensemble** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Solo Performance** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Composing/ Arranging** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Improvising** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Ensemble director** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Musical theater** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Private music instruction** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Summer music camp** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Garage Band** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Recording studio work** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Professional performer** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Section II – Current Musical Activities and Behaviors**

How often do you currently engage in the following musical activities and behaviors (including your participation in your New Horizons group)?

| Musical Activities | Often | Occasionally | Seldom | Never |
|---|---|---|---|---|
| **Choral ensemble** | 4 | 3 | 2 | 1 |
| **Instrumental ensemble (band)** | 4 | 3 | 2 | 1 |
| **Orchestral ensemble** | 4 | 3 | 2 | 1 |
| **Chamber Ensemble** | 4 | 3 | 2 | 1 |
| **Solo Performance** | 4 | 3 | 2 | 1 |
| **Composing/ Arranging** | 4 | 3 | 2 | 1 |
| **Improvising** | 4 | 3 | 2 | 1 |
| **Ensemble director** | 4 | 3 | 2 | 1 |
| **Musical theater** | 4 | 3 | 2 | 1 |
| **Private or small group music instruction** | 4 | 3 | 2 | 1 |
| **Participate in a Garage Band** | 4 | 3 | 2 | 1 |
| **Participate in 'family music time'** | 4 | 3 | 2 | 1 |
| **Recording studio work** | 4 | 3 | 2 | 1 |
| **Professional ensemble (instrumental or choral)** | 4 | 3 | 2 | 1 |

**Section III – Factors relating to participation**

Please read each of the following items carefully, thinking about how it relates to your music participation, and then indicate how true it is for you.

| | Very True | | | Some-what True | | | Never True |
|---|---|---|---|---|---|---|---|
| 1. I feel like I am able to give input into how the ensemble functions. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2. I really like the other members of my ensemble. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 3. Often, I do **not** feel very competent when I am performing and rehearsing. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 4. I feel pressured when I perform and rehearse. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 5. People I know tell me I am a good musician. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 6. I get along with the other members of the ensemble. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 7. I keep to myself at rehearsals and performances, and don't have a lot of social interaction with the other members of the ensemble. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 8. I am free to express my ideas and opinions about how the music is performed. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 9. I consider other members of the ensemble to be my friends. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 10. I have been able to develop new music skills recently. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 11. I frequently have to play the music the way I am told. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 12. Other members of the ensemble care about me. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 13. Most days I feel a sense of accomplishment from how I perform. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 14. The other members of the ensemble tend to take my feeling into consideration. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 15. In rehearsals or performances, I do **not** get much of a chance to show how capable I am. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 16. I am **not** close to the other members of the ensemble. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 17. When I am with the other members of my ensemble, I feel like I can pretty much be myself. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 18. Other members of my ensemble do **not** seem to like me much. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 19. When I am performing, I often do **not** feel very capable. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 20. There is **not** much opportunity for me to decide for myself how to perform the music. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 21. The other members of the ensemble are generally friendly towards me. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

**Section IV – Influence of music participation**

Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you.

| | Very True | | | Some-what True | | | Never True |
|---|---|---|---|---|---|---|---|
| 1. My experiences in my NHIMA ensemble have had a positive influence on my musicianship. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2. My experiences in my NHIMA ensemble have had a positive influence on my overall health. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 3. My experiences in my NHIMA ensemble have had a positive influence on my quality of life. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 4. My experiences in my NHIMA ensemble have had a positive influence on my family life. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 5. My experiences in my NHIMA ensemble have had a positive influence on my social life. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

**Section V – Life Satisfaction**

Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you.

| | Very True | | | Some-what True | | | Never True |
|---|---|---|---|---|---|---|---|
| 1. In most ways my life is close to my ideal. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2. The conditions of my life are excellent. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 3. I am satisfied with my life. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 4. So far, I have gotten the important things I want in life. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 5. If I could live my life over, I would change almost nothing. | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

**Section VI – Factors preventing participation**

Which factors may prevent you from participating in music?

| Factors | Very | Somewhat | Little | Not at all |
|---|---|---|---|---|
| **Participation fee** | 4 | 3 | 2 | 1 |
| **Scheduling conflicts** | 4 | 3 | 2 | 1 |
| **Distance to travel** | 4 | 3 | 2 | 1 |
| **Transportation problems** | 4 | 3 | 2 | 1 |
| **Professional Obligations** | 4 | 3 | 2 | 1 |
| **Personal Health** | 4 | 3 | 2 | 1 |
| **Family Obligations** | 4 | 3 | 2 | 1 |
| **Childcare** | 4 | 3 | 2 | 1 |
| **Late rehearsals** | 4 | 3 | 2 | 1 |
| **Long rehearsals** | 4 | 3 | 2 | 1 |
| **Too many rehearsals** | 4 | 3 | 2 | 1 |
| **Loss of enjoyment** | 4 | 3 | 2 | 1 |
| **Diminishing skill level** | 4 | 3 | 2 | 1 |
| **Director's personality** | 4 | 3 | 2 | 1 |
| **Director's competence** | 4 | 3 | 2 | 1 |
| **New director** | 4 | 3 | 2 | 1 |
| **No/little input into music selection** | 4 | 3 | 2 | 1 |
| **Music difficulty (for me)** | 4 | 3 | 2 | 1 |
| **Music difficulty (for ensemble)** | 4 | 3 | 2 | 1 |
| **Music is too easy** | 4 | 3 | 2 | 1 |
| **Music is too often uninteresting or unexciting** | 4 | 3 | 2 | 1 |
| **Decrease in quality of the ensemble** | 4 | 3 | 2 | 1 |
| **Unsupportive environment** | 4 | 3 | 2 | 1 |
| **Too critical of environment** | 4 | 3 | 2 | 1 |
| **Unbalanced instrumentation/seating** | 4 | 3 | 2 | 1 |

**Section VII – Demographics**

Your age on your last birthday:

☐ 18 – 24 ☐ 25 – 34 ☐ 35 – 44 ☐ 45 – 54 ☐ 55 – 64

☐ 65– 74 ☐ 75 and older ☐ I prefer not to say

Gender: ☐ M ☐ F

Marital Status

☐ Single ☐ Married ☐ Widowed ☐ Divorced ☐ Separated

Which category most closely describes or described your profession or vocation?

☐ Professional Trade (i.e. doctor, lawyer, engineer, professor, etc.)

☐ White Collar (i.e. business person, self-employed, teacher, etc.)

☐ Blue Collar (i.e. tradesman, craftsman, service trades, etc.)

☐ Professional Musician

☐ Homemaker

Do you teach music professionally? ☐ Yes ☐ No

Are you a professional musician? ☐ Yes ☐ No

Are you retired? ☐ Yes ☐ No

What is your annual household income?

☐ less than $15,000 ☐ $15,000 to $24,999 ☐ $25,000 to $39,999

☐ 40,000 to $59,999 ☐ $60,000 to $79,999 ☐ 80,000 to $99,999

☐ more than $100,000 ☐ I do not wish to indicate my income.

What is your highest degree earned?

☐ High school diploma ☐ GED ☐ Associate ☐ Bachelor's

☐ Master's ☐ Doctorate ☐ Vocational ☐ None

Do you have a college degree in music? ☐ Yes ☐ No

Which of the following best describes your racial or ethnic background?

☐ African–American/Black ☐ Asian–American/Asian ☐ Caucasian/White

☐ Mexican–American/Chicano ☐ Other Latino ☐ Native American

☐ Other

## THANK YOU FOR YOUR PARTICIPATION